

of this at great heights the denser gases could only occur as a very small percentage and the lighter constituents, of which hydrogen is the most generally known, must gradually begin to predominate. The convection currents alter this state of things only so far as the lower atmosphere (the troposphere) is concerned. Above 10 or 11 kilometers (at least in the Temperate Zone) little convection occurs, and above this level the change of composition is expected to begin. Also above that same level the fall of temperature with height ceases. As the velocity of sound in hydrogen is much greater than that in nitrogen or oxygen, it follows from this that at very great heights the velocity of sound increases so much that the sound rays are curved toward the earth.

In the light of these two competing theories the present author considers the following eight cases which have occurred during the present war: (1) Bombardment of Antwerp, October 7-9, 1914; (2) naval battle on the North Sea, October 17; (3) bombardment of German positions on the Yser by British naval guns, October 18; (4) heavy fighting on the line Ostend-Nieuport-Ypres, October 22; (5) heavy fighting at the Yser Canal, east of Ypres and south of Lille; (6) bombardment of German artillery in Flanders by 12-inch British naval guns, October 28; (7) severe attack of Germans on Ypres, British naval guns in action, heavy fighting at Dixmuiden, on the Lys, and at Messines; (8) naval battle on the North Sea, January 24, 1915. These cases are illustrated by maps and an elaborate table of the meteorological conditions at the times in question. Reviewing these cases, the author notes that the silent region is often displayed, and in the siege of Antwerp in an extraordinarily regular form.

Of the two explanatory theories put forward, the influence of variations of wind and temperature with height leads us to expect an asymmetry with respect to the source of sound and a difference between two mutually perpendicular directions, and permits of all kinds of distances. The physical explanation, on the other hand, requires complete symmetry with respect to the source of sound. It is found that the outer limit of the silent region is only slightly changed by considerable irregularities in the distribution of wind or temperature.

Probably many of the cases observed are explicable on the meteorological theory, although there is not absolute proof of this. In favor of the physical theory it must be noted that the border of the silent region has been always at about 160 kilometers from the probable source of sound and that no appreciable deviations from the circular form have been found.—E. H. B[arton].

SPONTANEOUS IONIZATION OF THE AQUEOUS VAPOR OF THE ATMOSPHERE. II.⁴

By G. ODDO.

[Reprinted from Science Abstracts, Sect. A, Apr. 25, 1916, §460.]

The author discusses the various views which have been expressed concerning the origin of atmospheric electricity, this being connected largely, if not entirely, with the presence of water vapor. The molecules of the latter, being in a rarified or diluted state, undergo spontaneous ionization in the same way as do electrolytes in dilute aqueous solution; the ionized aqueous vapor of the atmosphere acts, therefore, as a conductor of the second class. In comparison with this source of ions, all other sources, such as the actions of ultra-violet radiation

⁴ Gazz., Soc. chim. Ital., 1915, 1, 45: 395-412.

from the sun and of terrestrial radioactive substances, etc., must be regarded as subsidiary.

From the specific humidity of the air, the number of molecules contained in one gram-molecule of a gas, and the number of ions formed from 100 molecules of water at different temperatures, the ionic concentration is calculated for various temperatures and pressures. Fall of temperature diminishes the proportion of water vapor in the air, but starting from 32°C. increases its degree of ionisation. The calculations now made show that the ionic concentration, C_1 , is highest and approximately constant between 5° and 20°; it remains high even at -10°C., but diminishes rapidly between -10° and -20°, in spite of the rapid increase in the degree of ionization; it is also high at 25°, decreasing rapidly at higher temperatures and becoming virtually zero at 32°. With varying pressure the ionic concentration changes nearly in accordance with Boyle's law, $p \times C_1 = K$. It will be seen that the ionic concentration of the atmosphere is at its maximum for those conditions of temperature which are most suitable to animal and vegetable life, and it may be assumed that the latter constitutes a true indicator of this ionic concentration.

At 15° and a pressure of 760 millimeters, 1 kilogram of moist air, occupying 773.4 liters at 0° and 760 millimeters in the dry state, contains 89×10^{-20} hydrogen and hydroxyl ions, and such marked ionization would lead to the supposition that many processes of oxidation and reduction, occurring in contact with air, are electrolytic in character. A number of natural processes of the inorganic, vegetable, and animal kingdom are discussed on these lines.—T. H. P[ope].

VARIATION OF EMANATION CONTENT OF SPRINGS.⁵

By R. R. RAMSEY.

[Reprinted from Science Abstracts, Sect. A, Apr. 25, 1916, §451.]

An examination of the variation of the emanation content of certain springs shows roughly that an increase coincides with a season of rain and a decrease with dry weather.—A. B. W[ood].

PLANETARY PHENOMENA AND SOLAR ACTIVITY.⁶

By T. KÖHL.

[Reprinted from Science Abstracts, Sect. A, Mar. 25, 1916, §297.]

Jupiter's northern cloud belts appear to be specially weak at times of sun-spot maxima and become broader and more conspicuous during minima. The secondary light on the dark side of Venus is mentioned in relation to the occurrence of auroral displays on the earth.—C. P. B[utler].

FREE-AIR DATA BY MEANS OF SOUNDING BALLOONS, FORT OMAHA, NEBR., JULY, 1914.

WILLIAM R. BLAIR, Professor of Meteorology in charge.

[Dated: Aerological Investigations, Weather Bureau, Washington, Mar. 10, 1916.]

The primary purpose of this series of observations was the study of the diurnal variation of the different meteorological elements observed at the higher levels. Our observation of this variation¹ had heretofore been by

⁵ Proc., Indiana acad. sci., 1914, p. 489.

⁶ Astron. Nachr. No. 4821. *Abstracted* in Nature, Jan. 6, 1916, 96: 521.

¹ The diurnal system of convection, Bulletin of the Mount Weather Observatory, 1914, 6, part 5, pp. 221-252.

means of kites and was consequently limited to levels up to 3 kilometers. As shown in Table 1, three ascensions, those of July 1 at midnight, July 9 and 11 at midday, were for the purpose of carrying up self-recording pyrheliometers belonging to the Smithsonian Institution. No meteorograph was carried in these ascensions. Meteorographs were taken up in later ascensions on the 9th and 11th.

temperature of the air in which it was to record. No corrections to its indications on account of temperature were necessary. In this series of ascensions the balloons were followed with two theodolites, the distance between the theodolites being 5,088 meters. The direction of this base line is south 9.9° east. A comparison of the heights determined by the two methods, Table 2, indi-

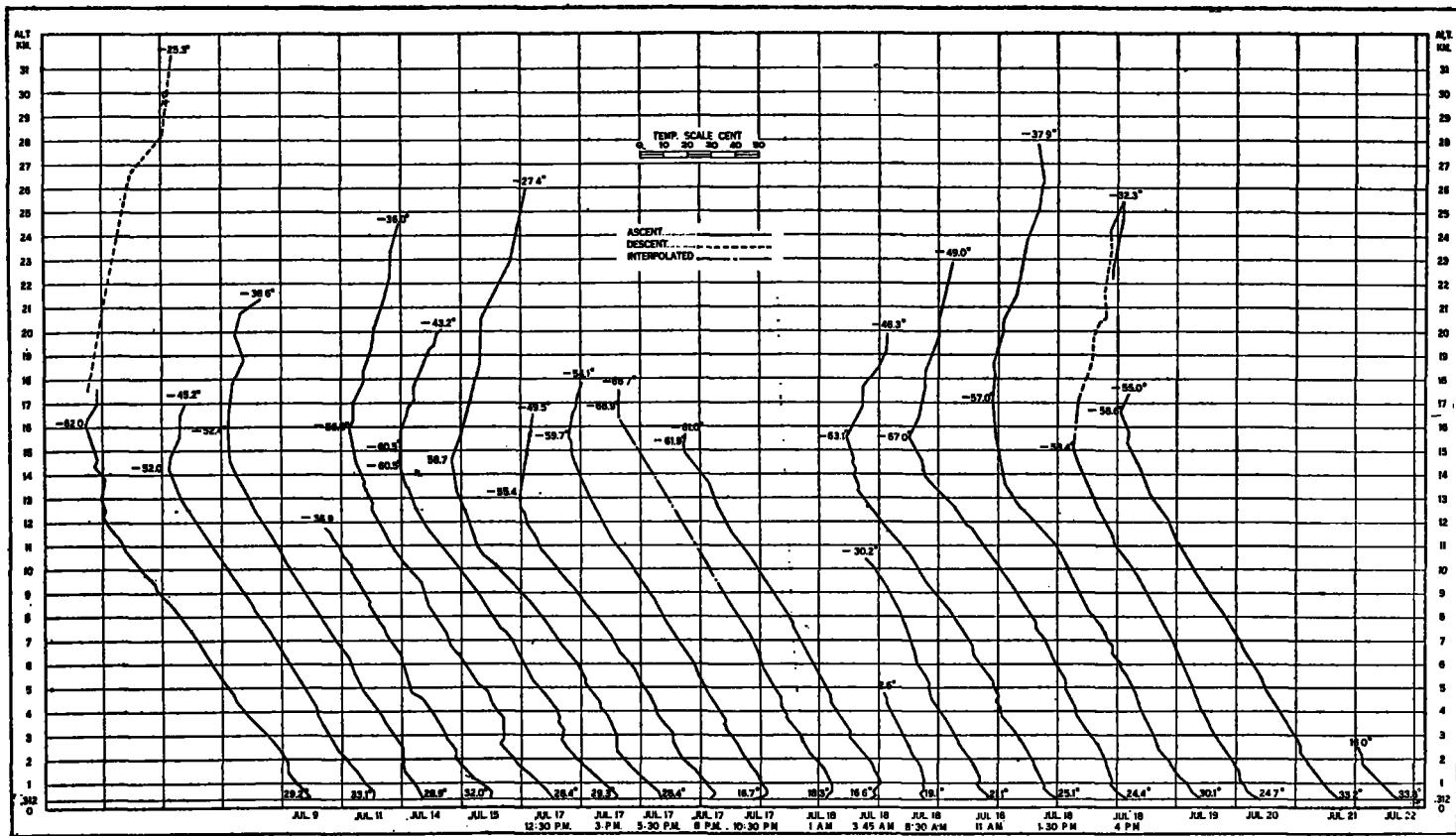


FIG. 1.—Vertical temperature gradients at Fort Omaha, Nebr., July 9 to 22, 1914.

The series of ascensions made during the 17th and 18th, in which balloons were sent up every two and one-half hours, was preceded, also followed, by several daily ascensions. The balloon sent up at 6:05 a. m., July 18, was not found. In the ascensions of July 16 and at 8:30 a. m., July 18, only partial records were obtained because the clocks stopped.

The balloons used in this series were similar in material and construction to those used since 1910 at Huron, S. Dak., Fort Omaha, Nebr., and Avalon, Cal. Their ascensional rates show a variation with altitude similar to that shown in the previous series of ascensions when the balloons were sent up during insolation. In those ascensions made at night, when the sun was not shining on the balloons, the ascensional rate is quite uniform. This fact supports the explanation² of the variable ascensional rate when the sun shines on the balloon.

The instruments used and the method of calibrating them are the same as have been used in previous series of soundings.²

In all free-balloon soundings made by the Weather Bureau prior to the series under discussion the altitudes were computed from the indications of the barometer. The barometer was calibrated at approximately the

cates a small difference in the mean values. Heights by triangulation are somewhat higher than those by the barometer. If the second ascension made on July 17 were not included in Table 2, practically no difference in the two methods of determining heights would be shown. In the consideration of the pressure-altitude relation it seemed desirable to have altitudes determined independently; also, to have a comparison of triangulated and barometric altitudes.

The data obtained in each ascension are shown in Table 3. The temperature-altitude relation found in each observation is graphically presented in figure 1. The mean value of this relation is shown in figure 2. Free-air isotherms for the period July 14 to 21 are shown in figure 3. In this diagram, which is intended to give a general view of the temperature changes for the period, only one each of the ascensions made on July 17 and on July 18 have been used. The minimum temperature at the base of the upper inversion is found at altitudes ranging from 14.2 km. to 17.1 km. Below these levels the gradient is fairly uniform, except for slight interruptions at levels in which condensation or evaporation of moisture is in progress. A surface inversion of temperature is fairly well defined in ascensions made between the evening of July 17 and the morning of the 18th. Because of the clear weather conditions prevailing on the evening of

² Bulletin of the Mount Weather Observatory, 1911, 4:186. MONTHLY WEATHER REVIEW, 1914, 42:410, 411.

the 17th, the earth's surface cooled rather rapidly by radiation. The air resting on the surface became cool by contact with it. The inversion of temperature continues to begin at the earth's surface until about sunrise. After this the earth's surface becomes warmer by the absorption of the sun's heat. The air next the surface is heated by contact. Convection sets in and the heat is gradually carried to higher and higher levels. On a clear day the inversion would disappear a few hours after sunrise, but the morning of the 18th became cloudy a few hours after sunrise. The earth's surface did not, therefore, become very warm, nor was convection very active. Consequently the inversion persisted well into the afternoon, beginning at slightly higher levels as the upper limit of the local convective mixing increased in altitude.

The curve shown in figure 2 has the same general characteristics as have the similar curves shown in *MONTHLY WEATHER REVIEW*, 1914, 42: 413, figure 5, and *Bulletin of the Mount Weather Observatory*, 1911, 4: 302, figure 31. In each of these three mean curves there is but one observation at the very high levels—i. e., at 30 kilometers above sea and a few levels below. These three high ascensions were all made in the summer half of the year, their dates being September 1, 1910, July 30, 1913, and July 9, 1914. The shape of the extreme upper part of the curve—say from 25 to 30 kilometers—should, therefore, be thought of as belonging to the summer season.

In figures 4 and 5 are plotted the horizontal projections of the paths taken by the balloons in the various ascensions. Figure 5 has plots for all ascensions made in the series of July 17 and 18. Figure 4 contains the plots for all other ascensions made in July, 1914. The variable winds indicated in the lower levels by these plots are related fairly well to the surface pressure distribution shown in figure 6. Above the 5 or 6 kilometer level a steady westerly wind seems to prevail up to about the 15 or 16 kilometer level. Here the wind direction begins to change, and by the time the 20-kilometer level has been reached it has become decidedly easterly. The highest rate of air movement from a westerly direction is found at about the 11 to 15 kilometer levels, or about 2 or 3 kilometers below the level of minimum temperature. The level of minimum temperature is found in and usually near the top of the westerly current. The rate of air movement from an easterly direction is found to be increasing with altitude as far up as our observations extend. A rate of 19 m.p.s. at about the 31-kilometer level has been observed.

The observations of humidity for the period have been expressed in grams per cubic meter in Table 4. It may be noted here, as in data obtained in previous series, that the minimum moisture content of the air is found at the levels of minimum temperature. If the ratio of the weight of water vapor to the weight of dry air at the different levels be considered, its value in the average for the observations recorded in Table 4 is approximately $1\frac{1}{4}$ per cent at the surface, 0.6 per cent at the 31-kilometer level, but only 0.002 per cent at the 16-kilometer level. These observations seem to indicate that the air of the upper westerly current is drier than that of the easterly current next above it.

The data obtained in the 12 ascensions made at intervals of two and one-half hours from 12:30 p. m., July 17, to 4:00 p. m., July 18, are the beginning of a number of such series of data having for its purpose the study of

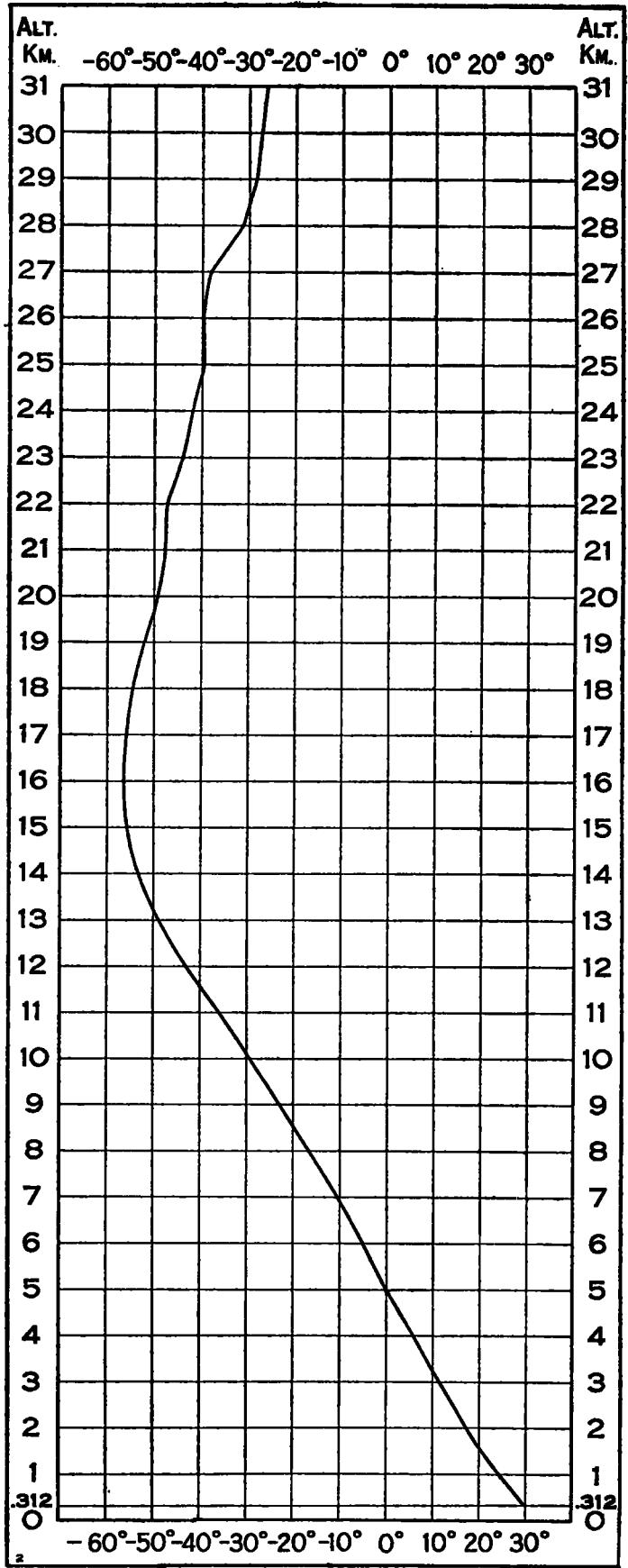


FIG. 2.—Mean vertical temperature gradient at Fort Omaha, Nebr., July 9 to 22, 1914.

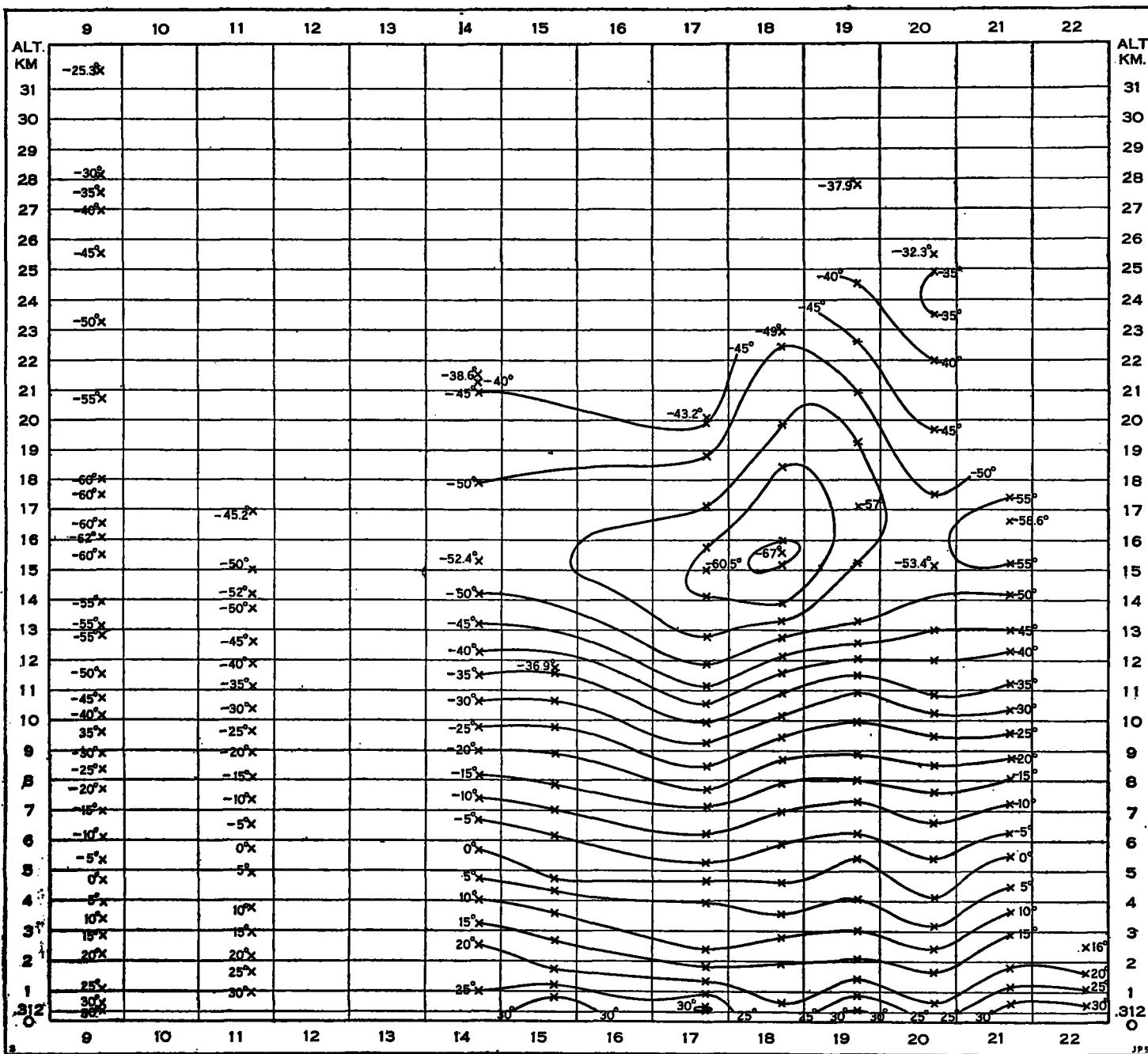
diurnal variation of the different meteorological elements at high as well as at low levels. The weather conditions varied considerably during this series of observations. Consequently, while this series will be of great value when comparison of it with other similar series of observations enables us to eliminate its peculiarities, not much can be ventured on the data obtained. Figure 6 shows the actual temperature distribution to a height of 10 kilometers for the 27½ hours. In figure 7 an attempt has been made to eliminate other than the diurnal variations of temperature at the different levels for which curves are plotted. These curves seem to indicate a minimum of diurnal variation in this element, at least, at the 6 or 7 kilometer level. Such a minimum was expected as a result of the study of the diurnal system of convection³ based on observations to a height of 3 kilometers by means of kites. A rather large diurnal variation of temperature is shown at the 8-kilometer level and above. The curves showing this variation

differ from those below in that the maximum temperature is found between 10 and 11 a. m. and the minimum at from 8 to 9:30 p. m. This maximum and minimum occur earlier than one would expect them if they were mainly accounted for by the absorption by the air at these levels of direct and reflected solar radiation. It seems likely that the peculiar distribution of moisture found in the period of observation up to the 12-kilometer level is, in part at least, responsible for the peculiarities noted above in the temperature curves.

Table 5 shows the distribution of absolute humidity at different levels throughout the 27½-hour period. The gradual increase from the values observed at 12:30 p. m., July 17, to approximately twice these values at 4 p. m., July 18, obtain up to the 12-kilometer level only.

The balloons sent up at night carried a small electric light. By this means they could be followed with the theodolite to a limited distance, and the wind direction and velocity at these hours obtained. Table 6 shows the hourly wind direction and velocity at levels up to 6 kilometers above sea.

³ Bulletin of the Mount Weather Observatory, 1913, 6, part 5, p. 230.



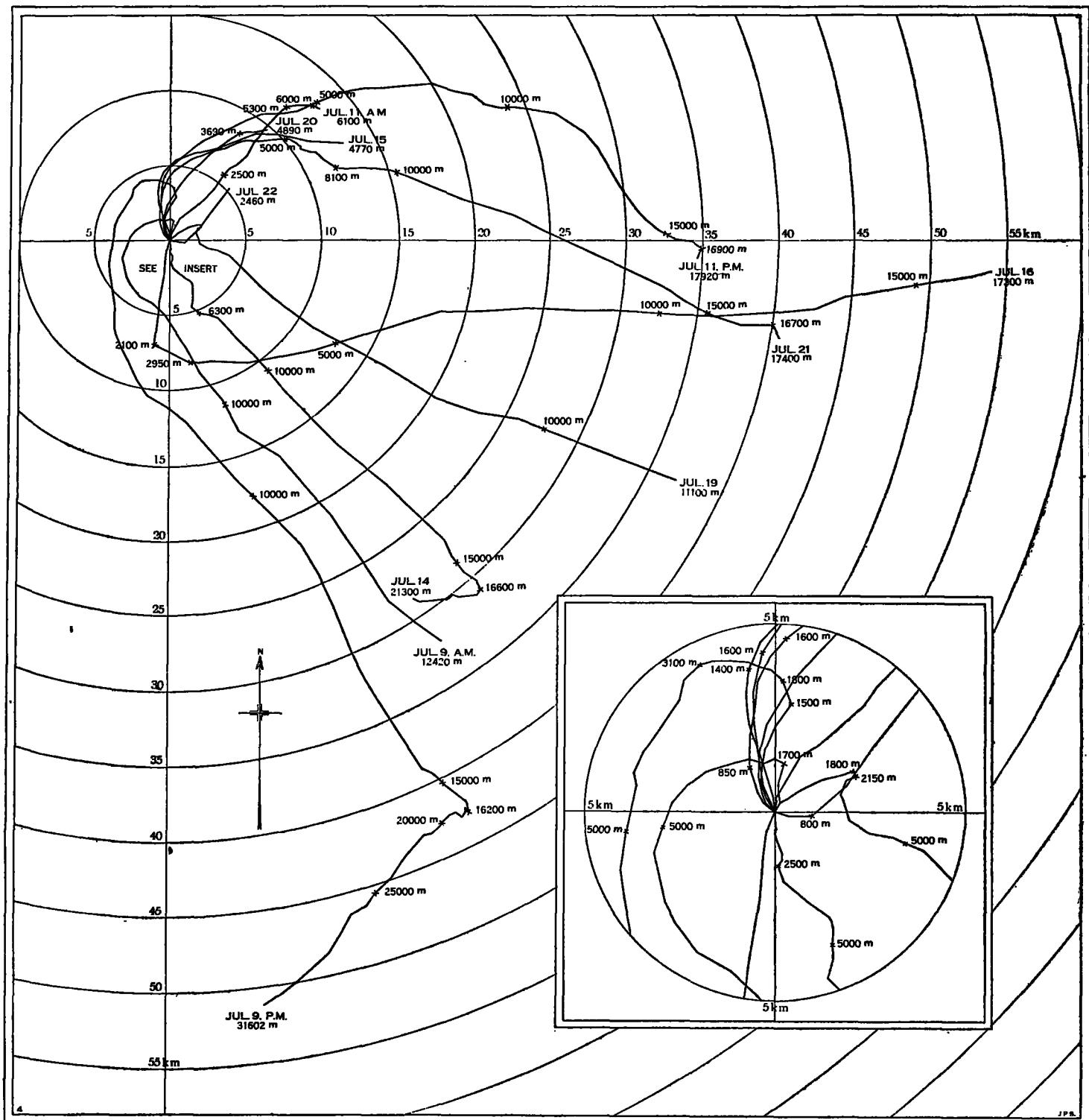


FIG. 4.—Horizontal projections of the paths of sounding balloons liberated at Fort Omaha., Nebr., July 9 to 16, and 19 to 22, inclusive, 1916.

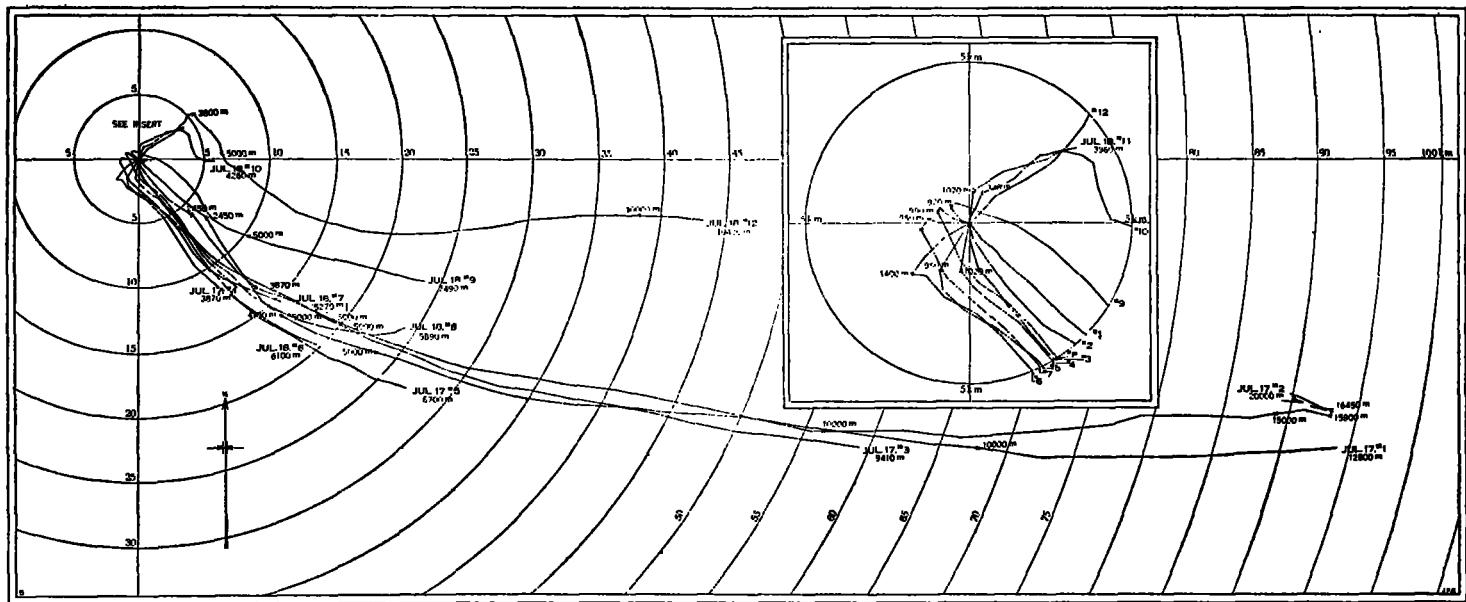


FIG. 5.—Horizontal projections of the paths of sounding balloons liberated at Fort Omaha, Nebr., July 17 and 18, 1914.



FIG. 6.—TRACKS OF HIGHS AND LOWS across the central United States, July 9 to 22, 1914.

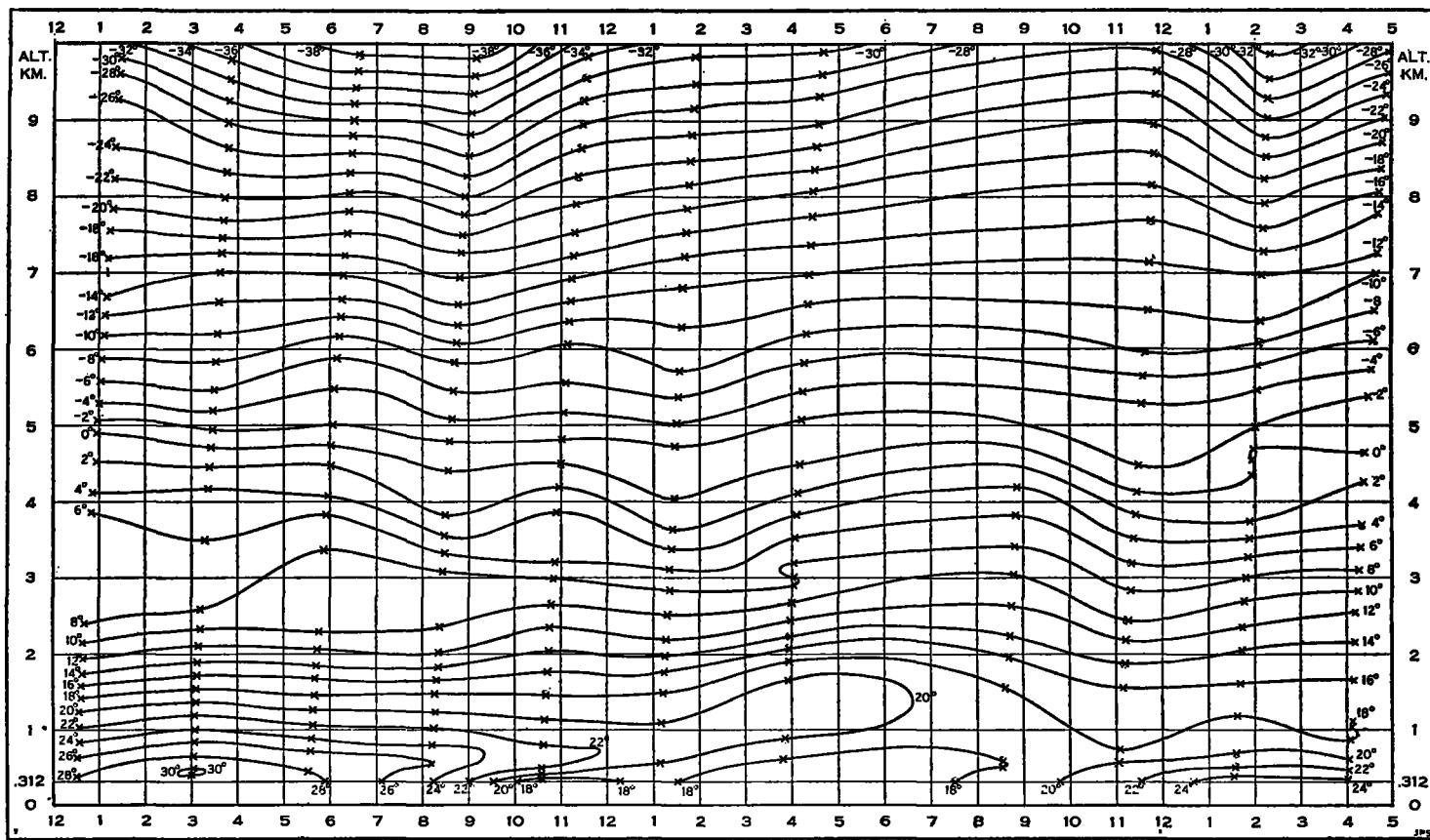


FIG. 7.—Free-air temperatures at Fort Omaha, Nebr., 12:30 p. m. July 17 to 4 p. m. July 18, 1914.

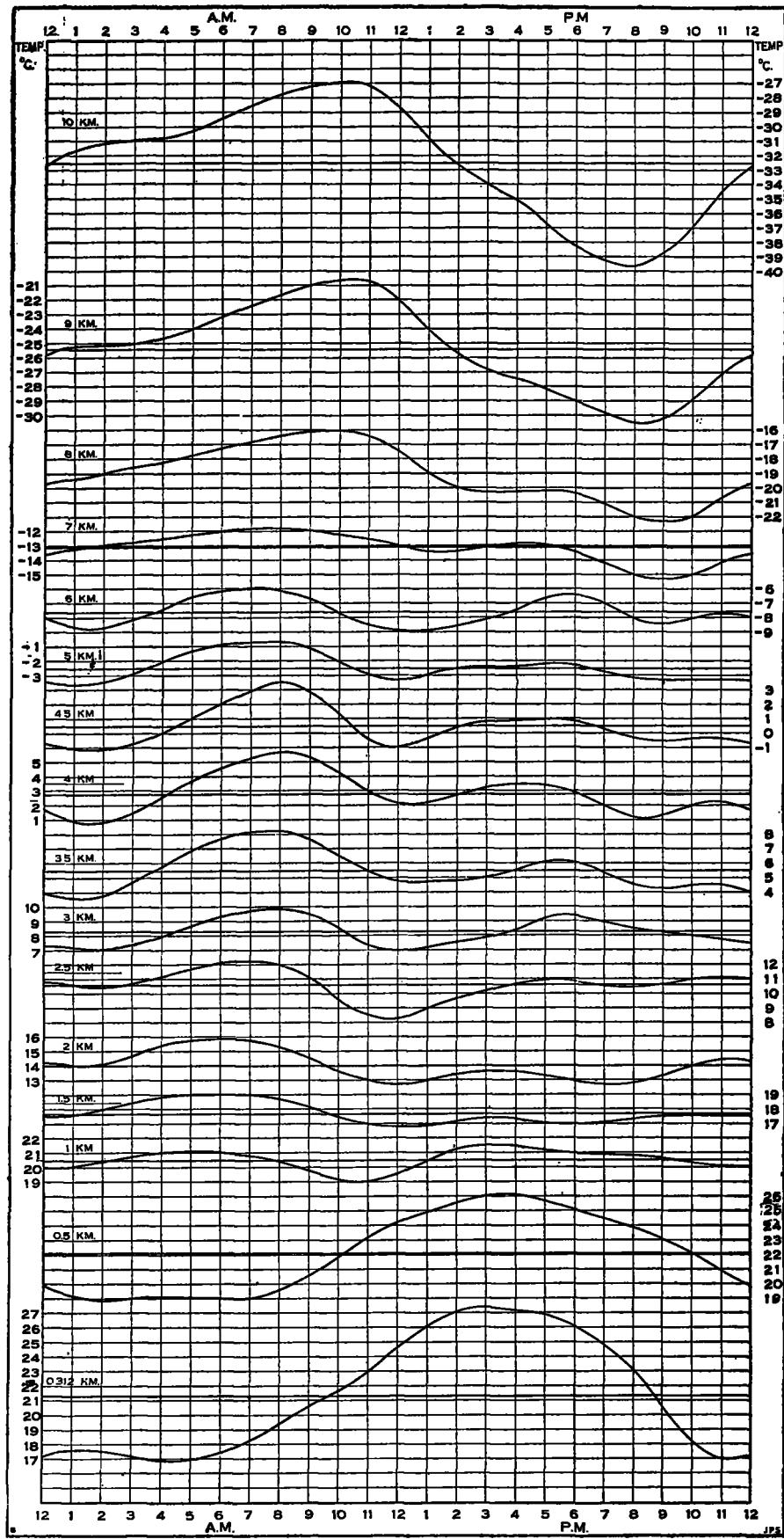


FIG. 8.—Smoothed diurnal curves of temperature above Fort Omaha, Nebr., observed from 2:30 p.m. July 17 to 2:30 p.m. July 18, 1914.

TABLE 1.—Statistics of sounding balloon ascensions from Fort Omaha, Nebr., during July, 1914.

Date.	Hour C. S. T.	Balloons.		Landing point (nearest town).	Horizontal distance traveled.	Direction traveled.	Highest altitude reached.	Lowest temperature recorded.
		Number.	Ascen-sional force.					
July 1 ^a .	11:26 p.	3	Kg.	Harvard, Iowa	235	ESE.	M.	°C.
July 9 ^a .	10:11 a.	3	1.1	Omaha, Nebr.	6	S.		
July 9.	4:15 p.	1	0.4	Murray, Nebr.	55	S.	31,602	-62.0
July 11 ^a .	10:30 a.	3	0.8	Carson, Iowa	41	E.		
July 11.	4:02 p.	1	0.6	Oakland, Iowa	43	E.	17,920	-52.0
July 14.	4:04 p.	1	0.6	Tabor, Iowa	53	SSE.	21,358	-52.4
July 15.	4:02 p.	1	0.6	Brayton, Iowa	89	ENE.	11,748	-38.9
July 16.	4:00 p.	1	0.8	Atlantic, Iowa	80	E.		
July 17.	12:30 p.	1	0.8	Cromwell, Iowa	128	ESE.	24,500	-56.6
July 17.	3:00 p.	1	0.6	Carl, Iowa	115	ESE.	20,080	-60.5
July 17.	5:31 p.	1	0.8	Arispe, Iowa	150	ESE.	25,953	-58.7
July 17.	8:10 p.	2	1.0	Canton, Mo.	388	ESE.	16,570	-55.4
July 17.	10:34 p.	2	1.0	Leon, Iowa	192	ENE.	17,837	-59.7
July 18.	1:07 a.	2	1.1	Kingston, Iowa	181	ESE.	17,560	-68.9
July 18.	3:47 a.	2	1.0	Grand River, Iowa	180	ESE.	16,169	-61.9
July 18.	6:05 a.	1	0.8					
July 18.	8:30 a.	1	0.7	Williamson, Iowa	118	ESE.		
July 18.	11:00 a.	1	0.8	Oakland, Iowa	48	E.	10,411	-30.2
July 18.	1:32 p.	1	0.8	Spaulding, Iowa	133	E.	19,903	-63.1
July 18.	4:00 p.	1	0.8	Orient, Iowa	128	E.	22,930	-67.0
July 19.	4:08 p.	1	0.8	Stanton, Iowa	87	ESE.	27,782	-57.0
July 20.	4:01 p.	1	0.8	Griswold, Iowa	71	E.	25,481	-53.4
July 21.	4:00 p.	1	0.8	Griswold, Iowa	66	E.	17,402	-58.6
July 22.	4:00 p.	2	1.1	Crescent, Iowa	13	NE.	2,464	16.0

*These three ascensions were made for the Smithsonian Institution; no meteorograph was used.

TABLE 2.—Comparison of altitude determinations from pressure and triangulation.

Date.	Altitudes, meters, from pressure.																					
	500	1,000	1,500	2,000	2,500	3,000	3,500	4,000	4,500	5,000	6,000	7,000	8,000	9,000	10,000	11,000	12,000	13,000	14,000	15,000	16,000	
Altitudes from triangulation.																						
1914.	M.	M.	M.	M.	M.	M.	M.	M.	M.	M.	M.	M.	M.	M.	M.	M.	M.	M.	M.	M.		
July 9.	500	1,000	1,500	2,000	2,500	3,000	3,450	4,040	4,550	5,030	6,080	7,080	8,000	8,960	9,910	10,880	11,910	12,970	14,000	15,000	16,000	
July 11.	500	1,000	1,500	2,000	2,500	3,000	3,580	4,120	4,850	5,150	6,150	7,150	8,160	9,260	10,400	11,430	12,430	13,420	14,380	15,370	16,360	
July 14.	500	1,000	1,500	2,000	2,500	3,000	3,500	4,000	4,500	5,000	6,000	7,000	8,000	9,000	10,000	11,000	12,000	13,000	13,870			
July 15.	470	930	1,430	2,000	2,580	3,050	3,570	4,170	4,620													
	500	1,000	1,500	2,000	2,500	3,000	3,500	4,000	4,500	5,000	6,000											
July 17.	1.	500	1,000	1,600	2,140	2,670	3,240	3,760	4,330	4,860	5,370	6,380	7,430	8,420	9,460	10,500	11,500	12,560	13,620			
	2.	500	1,000	1,600	2,140	2,670	3,240	3,760	4,330	4,860	5,370	6,380	7,430	8,420	9,460	10,500	11,500	12,560	13,620			
	3.	500	1,080	1,630	2,200	2,720	3,250	3,780	4,300	4,810	5,400	6,530										
	9.	500	1,000	1,500	2,000	2,500	3,050	3,560	4,070	4,580												
July 18.	10.	500	1,000	1,500	2,000	2,470	2,960	3,430	3,960													
	11.	580	1,150	1,630	2,120	2,620	3,180	3,720														
	12.	500	970	1,450	1,970	2,480	3,000	3,460	3,910	4,400	4,890	5,830	6,880	7,870	9,080	10,360						
July 19.	500	1,000	1,360	1,800	2,320	2,900	3,500	4,000	4,500	5,000												
July 20.	530	1,100	1,500	2,050	2,600	3,170	3,700															
July 21.	500	1,000	1,500	2,000	2,500	3,000	3,500	3,960	4,420	4,900	5,900	6,920	7,900	8,870	9,800	10,720	11,600	12,500	13,420	14,470	15,450	
Means.....	510	1,020	1,510	2,020	2,530	3,040	3,570	4,070	4,580	5,080	6,110	7,070	8,060	9,100	10,160	11,110	12,100	13,100	13,920	14,950	15,940	
Mean differences, %.....	2	2	1	1	1	2	2	2	2	2	1	1	1	1	1	1	1	1	0	0	1	

TABLE 3.—Results of sounding balloon ascensions, Fort Omaha, Nebr.

JULY 9, 1914.

Time.	Altitude.	Pressure.	Temperature.	Δt 100 m.	Humidity.		Wind.		Remarks.
					Rel. ative.	Absolu. te.	Direction.	Ve. locity.	
H. m.	M.	Mm.	°C.		Per cent.	G./cu. m.		M.p.s.	
A. M.									
10 11.0	312	736.6	27.2		70	18.038	S. 20° W.	1.0	No meteorograph.
10 12.2	500						S. 7° W.	2.2	1/10 Cl. w.
10 15.1	1,000						S. 14° W.	3.3	Light haze.
10 18.0	1,500						S. 10° W.	2.0	
10 20.8	2,000						N. 84° E.	3.1	
10 23.6	2,500						E.	3.6	
10 26.3	3,000						N. 84° E.	5.0	
10 29.0	3,500						N. 51° E.	5.2	
10 31.6	4,000						N. 34° E.	4.6	
10 34.1	4,500						N. 20° E.	6.2	
10 36.5	5,000						N. 18° E.	6.7	
10 41.1	6,000						N. 27° W.	5.4	
10 45.3	7,000						N. 59° W.	8.1	
10 49.2	8,000						N. 30° W.	9.4	
10 52.7	9,000						N. 30° W.	16.9	
10 56.2	10,000						N. 32° W.	19.4	3/10 Cl. w.
P. M.									
4 15.0	312	735.3	29.2		52	14.955	S. 38° E.	4.2	Few Cl. St., nw,
4 15.6	356	731.7	31.9	-6.14	45	14.971	S. 38° E.	4.2	on eastern hori. zon.
4 17.1	500		30.7		41	12.790	S. 20° E.	6.3	
4 18.4	650	707.9	29.4	0.85	37	10.757	S. 4° E.	5.7	
4 20.8	1,000		25.8		43	10.251	S. 12° W.	5.0	
4 21.3	1,080	673.4	24.9	1.03	44	9.973	S. 17° W.	5.7	
4 24.2	1,422	648.1	22.6	0.69	55	10.940	S. 17° W.	6.0	
4 25.0	1,500		22.6		48	9.547	S. 1° E.	5.1	
4 27.4	1,789	621.0	23.6	0.00	20	3.978	S. 23° E.	3.0	Cloudless.
4 29.4	2,000		21.3		18	3.323	S. 58° E.	3.5	
4 33.0	2,408	578.1	18.7	0.63	15	2.379	S. 05° E.	3.0	
4 34.0	2,500		17.9		18	2.723	S. 76° E.	3.6	
4 38.6	3,001	539.0	13.6	0.86	21	2.451	N. 76° E.	2.9	
4 43.0	3,500		8.8		28	2.421	N. 21° E.	5.2	
4 44.5	3,763	491.6	6.2	0.97	32	2.340	N. 20° E.	7.5	
4 46.7	4,000		4.3		32	2.066	N. 33° E.	5.8	
4 49.8	4,430	453.4	0.9	0.79	33	1.697	N. 18° E.	5.8	
4 50.3	4,500		0.6		33	1.662	N. 13° E.	6.2	
4 52.1	4,703	438.0	-0.2	0.40	33	1.570	N. 9° E.	6.8	
4 53.9	5,000		-2.5		32	1.270	N. 9° E.	6.8	
4 56.3	5,282	407.1	-4.6	0.70	32	1.073	N. 7° E.	7.4	
5 00.8	8,000		9.3		30	0.685	N. 8° W.	9.1	
5 02.0	8,177	363.3	-10.4	0.05	29	0.604	N. 4° W.	11.0	
5 07.2	7,000		-15.1		27	0.373	N. 26° W.	10.0	
5 07.5	7,030	324.9	-15.3		27	0.367	N. 25° W.	9.9	
5 11.5	7,763	295.1	-20.6	0.72	27	0.227	N. 40° W.	10.6	
5 13.0	8,000		-22.4		27	0.191	N. 59° W.	11.2	
5 15.3	8,455	268.7	-25.8	0.75	26	0.134	N. 50° W.	13.9	
5 18.4	9,000		-30.9		27	0.085	N. 38° W.	14.9	
5 19.0	9,103	245.7	-31.9	0.94	27	0.076	N. 37° W.	15.2	
5 20.3	9,383	235.9	-32.8	0.32	27	0.070	N. 41° W.	15.5	
5 23.5	10,000		-38.7		26	0.036	N. 47° W.	15.0	
5 23.6	10,050	214.9	-39.2	0.90	26	0.034	N. 47° W.	15.1	
5 26.9	10,776	193.7	-45.4	0.85	26	0.017	N. 45° W.	18.5	
5 28.1	11,000		-46.4		25	0.015	N. 37° W.	19.4	
5 28.9	11,190	182.2	-47.3	0.46	24	0.013	N. 31° W.	20.0	
5 32.0	11,933	162.9	-53.2	0.79	24	0.008	N. 22° W.	19.0	
5 32.7	12,066		-53.5		24	0.006	N. 21° W.	19.6	
5 33.3	12,214	156.3	-54.5	0.46	24	0.005	N. 21° W.	19.0	
5 34.4	12,475	150.1	-53.8	-0.27	24	0.006	N. 23° W.	19.1	
5 36.4	12,918	140.5	-55.3	0.34	24	0.005	N. 29° W.	20.4	
5 37.1	13,000		-55.2		24	0.005	N. 30° W.	18.6	
5 40.3	13,800	122.8	-53.8	-0.17	24	0.006	N. 32° W.	17.2	
5 41.2	14,000		-55.5		24	0.005	N. 39° W.	16.1	
5 43.1	14,324	113.2	-58.2	0.84	24	0.003	N. 59° W.	13.5	
5 44.0	14,612	108.5	-57.2	-0.35	22	0.004	N. 58° W.	12.6	
5 45.4	15,000		-58.5		22	0.003	N. 48° W.	11.9	
5 49.0	16,000		-61.8		22	0.002	N. 13° W.	5.8	
5 49.3	16,085	86.1	-62.0	0.33	22	0.002	N. 10° E.	5.4	
5 50.6	16,329	83.1	-61.4	-0.25	22	0.002	N. 58° E.	3.6	
5 52.4	17,003	74.9	-57.2	-0.82	24	0.004	N. 34° E.	2.3	
5 55.5	17,562	68.5	-57.1	-0.02	22	0.004	N. 52° E.	4.2	Clock stopped un til 0:31 p. m.
5 57.0	18,000						S. 58° E.	4.2	
6 00.6	19,000						N. 50° E.	3.2	
6 04.2	20,000						N. 23° E.	2.1	
6 07.3	21,000						N. 55° E.	6.3	
6 10.2	22,000						N. 37° E.	8.3	
6 13.0	23,000						N. 38° E.	12.5	
6 15.7	24,000						N. 42° E.	10.3	
6 18.0	25,000						N. 51° E.	9.1	
6 20.3	26,000						N. 35° E.	11.7	
6 22.5	27,000						N. 30° E.	12.3	
6 24.5	28,000						N. 43° E.	17.7	
6 26.4	29,000						N. 50° E.	16.9	
6 28.2	30,000						N. 54° E.	18.9	
6 30.0	31,000								
6 31.0	31,602	8.6	-25.3	-0.11	23	0.124			
6 31.3	31,000		-26.0		23	0.116			
6 31.8	30,000		-27.1		23	0.104			
6 32.3	29,000		-28.2		23	0.093			
6 32.7	28,252	13.7	-29.0	-0.86	23	0.086			
6 32.8	28,000		-31.2		23	0.070			
6 33.5	27,000		-39.8		23	0.028			
6 33.7	26,690	17.1	-42.5	-0.21	23	0.021			
6 34.0	26,000		-43.9		23	0.018			
6 34.5	25,000		-46.0		22	0.013			
6 35.0	24,000		-48.1		21	0.010			

TABLE 3.—Results of sounding balloon ascensions, Fort Omaha, Nebr.,—Continued.

JULY 9, 1914—Continued.

Time.	Altitude.	Pressure.	Temperature.	Δt 100 m.	Humidity.		Wind.		Remarks.
					Rel. ative.	Absolu. te.	Direction.	Ve. locity.	
H. m.	M.	Mm.	°C.		Per cent.	G./cu. m.		M.p.s.	
P. M.									
6 35.5	23,000				-50.2				
6 35.9	22,000				-52.3				
6 36.0	21,881	35.2			-52.8	-0.19			
6 36.6	21,000				-54.5				
6 37.3	20,000				-56.4				
6 38.0	19,000				-58.3				
6 38.7	18,000				-60.2				
6 39.0	17,606	67.9			-60.8				

JULY 11, 1914.

Time.	Altitude.	Pressure.	Temperature.	Δt 100 m.	Humidity.		Wind.		Remarks.
					Rel. ative.	Absolu. te.	Direction.	Ve. locity.	
A. M.					Per cent.	G./cu. m.		M.p.s.	
P. M.									
10 30.3	312								S. 11° W.
10 31.2	500								S. 11° W.
10 33.0	1,000								S. 30° W.
10 35.0	1,500								S. 52° W.
10 39.0	2,000								S. 40° W.
10 42.4	2,500								S. 38° W.
10 46.0	3,000								S. 54° W.
10 49.2	3,500								S. 27° W.
10 52.3	4,000								S. 38° W.
10 55.2	4,500								S. 41° W.
10 58.3	5,000								S. 44° W.
11 03.8	6,000</								

TABLE 3.—Results of sounding balloon ascensions, Fort Omaha, Nebr.—Continued.

JULY 14, 1914—Continued.

Time.	Altitude.	Pressure.	Temperature.	Δt 100 m.	Humidity.		Wind.		Remarks.
					Relative.	Absolute.	Direction.	Velocity.	
H. m.	M.	Mm.	°C.		Per cent.	G./cu. m.		M.p.s.	
4 23.8	3,789	488.0	11.9	0.37	10	1.051	N. 58° W.	3.7	
4 25.1	4,000		10.2		10	0.939	N. 54° W.	4.7	
4 27.4	4,500		6.1		9	0.654	N. 6° W.	3.1	
4 28.9	4,394	426.8	3.8	0.81	8	0.500	N. 1° E.	3.7	
4 29.3	5,000		3.3		8	0.483	N. 41° W.	3.6	
4 32.5	5,595	391.4	0.3	0.50	7	0.345	N. 7° F.	3.7	
4 34.1	6,000		-1.1		6	0.286	N. 20° W.	4.6	
4 35.5	6,277	359.6	-2.0	0.34	6	0.248	N. 52° W.	5.3	
4 39.2	7,000		-7.3		4	0.107	N. 75° W.	5.4	
4 39.5	7,100	323.8	-8.0	0.73	4	0.101	N. 72° W.	5.3	
4 42.3	8,000		-13.9		5	0.077	N. 42° W.	5.4	
4 42.8	8,148	282.7	-14.9	0.66	5	0.070	N. 41° W.	5.6	
4 46.2	9,000		-20.1		5	0.034	N. 46° W.	5.9	
4 46.5	9,086	249.7	-20.6	0.61	5	0.042	N. 46° W.	9.1	
4 50.0	10,000		-26.5		5	0.024	N. 41° W.	13.1	
4 51.0	10,309	211.4	-28.6	0.65	5	0.019	N. 39° W.	14.5	
4 52.2	10,804	203.0	-29.9	0.44	5	0.017	N. 42° W.	14.0	
4 53.8	11,000		-32.2		4	0.011	N. 44° W.	13.6	
4 55.6	11,539	178.2	-35.2	0.57	3	0.006	N. 45° W.	13.8	
4 57.6	12,000		-38.2		3	0.003	N. 48° W.	14.8	
4 59.0	12,390	157.7	-40.7	0.65	3	0.003	N. 49° W.	16.1	
5 01.4	13,000		-43.7		3	0.002	N. 50° W.	18.5	
5 02.0	13,074	142.9	-44.1	0.50	3	0.002	N. 45° W.	18.4	
5 05.0	13,964	125.5	-49.0	0.55	3	0.001	N. 46° W.	17.0	
5 05.3	14,000		-49.2		3	0.001	N. 46° W.	17.9	
5 07.1	14,567	114.8	-51.6	0.43	3	0.001	N. 32° W.	19.4	
5 08.5	15,000		-51.8		3	0.001	N. 34° W.	11.7	
5 09.9	15,031	106.8	-51.8	0.04	3	0.001	N. 35° W.	11.2	
5 11.1	15,814	95.0	-52.4	0.08	3	0.001	N. 54° W.	8.2	
5 12.2	16,000		-52.3		3	0.001	N. 38° W.	6.9	
5 14.6	16,684	83.4	-51.8	-0.07	3	0.001	N. 28° E.	4.4	
5 15.3	17,000		-51.4		3	0.001	N. 48° E.	4.0	
5 18.0	17,851	69.7	-50.4	-0.12	3	0.001	N. 84° E.	4.6	
5 19.3	18,000		-49.7		3	0.001	N. 82° E.	4.7	
5 20.7	18,794	60.8	-45.9	-0.48	3	0.002	S. 76° E.	3.5	
5 21.1	19,000		-45.6		3	0.002	S. 75° F.	3.2	
5 23.3	19,853	52.0	-44.4	-0.14	3	0.002	N. 57° E.	4.6	1/10 C.L., no movement.
5 24.1	20,000		-44.0		3	0.002	N. 65° E.	0.9	
5 27.2	20,770	45.4	-42.1	-0.25	3	0.003	N. 88° E.	5.8	3/10 A. St., nw.
5 28.8	21,000		-40.7		3	0.003	S. 71° E.	4.7	
5 30.5	21,358	41.8	-38.6	-0.60	3	0.004			Balloon burst.

JULY 15, 1914.

P. M.									
4 02.0	312	725.9	32.0		57	19.064	S. 2° E.	5.3	1/10 A. Cu., w.
4 03.2	500		32.4		43	16.400	S. 9° E.	4.9	
4 03.5	573	705.1	32.6	-0.23	45	15.539	S. 12° E.	4.7	1/10 St. Cu., sw.
4 05.3	727	698.1	31.2	0.91	45	14.420	S. 18° E.	8.3	
4 08.0	1,000		27.4		49	12.767	S. 12° E.	6.1	
4 09.0	1,104	664.2	25.9	1.41	51	12.227	S. 8° E.	5.2	
4 12.5	1,492	634.9	22.0	1.01	58	11.428	S. 20° W.	6.0	
4 16.3	1,998	598.9	17.4	0.91	71	10.426	S. 60° W.	10.8	
4 18.7	2,337	575.6	17.4	0.00	63	9.251	S. 77° W.	12.4	
4 20.0	2,600		16.2		62	8.474	S. 74° W.	12.4	
4 21.5	2,785	545.6	14.1	0.73	59	7.100	S. 70° W.	11.9	
4 23.4	3,000		13.5		54	6.264	S. 74° W.	10.4	
4 24.8	3,243	517.0	12.9	0.26	49	5.478	N. 89° W.	9.2	
4 26.6	3,500		10.9		48	4.739	N. 88° W.	9.9	
4 28.2	3,768	485.0	8.8	0.78	47	4.064	N. 78° W.	10.1	Light rain from 4:28 to 4:30 p.m.
4 29.2	4,000		7.2		48	3.745	N. 76° W.	9.9	
4 30.7	4,500		3.7		51	3.165	N. 85° W.	8.3	
4 30.9	4,529	442.2	3.5	0.70	51	3.123	N. 88° W.	8.1	
4 34.0	4,766	429.4	-1.0	1.90	60	2.681	N. 88° W.	11.2	Balloon entered cloud layer.
4 35.2	5,000		-1.7		65	2.749			
4 38.6	5,418	395.6	-3.0	0.31	73	2.783			
4 42.5	5,875	373.6	-4.0	0.22	72	2.533			
4 45.3	6,000		-4.5		70	2.366			
4 44.0	6,113	362.4	-5.0	0.42	69	2.238			
4 45.3	6,319	353.1	-5.0	0.00	65	2.108			
4 48.1	6,810	331.7	-8.6	0.73	62	1.498			
4 49.3	7,000		-9.8		59	1.292			
4 50.7	7,242	313.6	-11.4	0.65	56	1.070			
4 53.2	7,529	302.1	-12.5	0.38	54	0.936			
4 54.9	7,618	291.2	-14.3	0.80	54	0.766			
4 56.8	8,000		-15.7		54	0.710			
4 56.0	8,113	279.9	-16.2	0.47	54	0.680			
4 59.4	8,537	264.7	-18.7	0.59	50	0.504			
5 00.3	8,666	260.3	-18.5	-0.16	50	0.501			
5 02.5	9,000		-20.4		50	0.429			
5 03.8	9,259	240.5	-21.9	0.57	50	0.372			
5 07.6	9,888	221.8	-25.5	0.60	48	0.254			
5 08.7	10,000		-25.7		47	0.244			
5 09.4	10,129	213.7	-25.8	0.11	47	0.242			
5 11.9	10,599	200.0	-29.9	0.87	47	0.163			
5 14.3	11,000	189.2	-31.3	0.35	47	0.141			
5 15.8	11,257	182.7	-33.4	0.82	47	0.114			
5 17.3	11,538	175.6	-34.5	0.39	47	0.108			
5 18.3	11,748	170.5	-36.9	1.14	47	0.079			

TABLE 3.—Results of sounding balloon ascensions, Fort Omaha, Nebr.—Continued.

JULY 16, 1914.

Time.	Altitude.	Pressure.	Temperature.	Δt 100 m.	Humidity.		Wind.		Remarks.
					Rel.	Abs.	Dir.	Vel.	
H. m.	M.	Mm.	°C.		Per cent.	G./cu. m.			
P. M.									
4 00.5	312	729.9	25.0		70	16.688	N. 15° E.	6.1	9/10 St. Cu., wsw.
4 01.3	500		25.0						
4 04.0	1,000		25.0						
4 06.8	1,500		25.0						
4 09.8	2,000		25.0						
4 12.0	2,500		25.0						
4 14.3	3,000		25.0						
4 16.7	3,500		25.0						
4 19.1	4,000		25.0						
4 21.5	4,500		25.0						
4 23.9	5,000		25.0						
4 26.3	5,500		25.0						
4 28.7	6,000		25.0						
4 31.1	6,500		25.0						
4 33.5	7,000		25.0						
4 35.9	7,500		25.0						
4 38.3	8,000		25.0						
4 40.7	8,500		25.0						
4 43.1	9,000		25.0						
4 45.5	9,500		25.0						
4 47.9	10,000		25.0						
4 50.3	10,500		25.0						
4 52.7	11,000		25.0						
4 55.1	11,500		25.0						
4 57.5	12,000		25.0						
4 60.0	12,500		25.0						
4 62.4	13,000		25.0						
4 64.8	13,500		25.0						
4 67.2	14,000		25.0						
4 69.6	14,500		25.0						
4 72.0	15,000		25.0						
4 74.4	15,500		25.0						
4 76.8	16,000		25.0						

MONTHLY WEATHER REVIEW.

MAY, 1916

TABLE 3.—Results of sounding balloon ascensions, Fort Omaha, Nebr.—Continued.

JULY 17, 1914 (Series No. 2).

Time.	Altitude.	Pressure.	Temperature.	Δt 100 m.	Humidity.		Wind.		Remarks.
					Relative.	Absolute.	Direction.	Velocity.	
H. m. P. M.	M. Mm.	M. Mm.	°C. °F.		Per cent.	G./cu. m.		M.p.s.	
3 00.0	312	736.4	29.3		23	6.651	N.14° W.	8.7	Few A.Cu., w.
3 01.1	436	726.2	30.4	-0.82	23	7.059	N.24° W.	9.7	
3 01.4	500		29.7		23	7.917	N.28° W.	10.1	
3 03.9	938	686.0	24.9	1.10	24	5.440	N.39° W.	7.4	
3 04.2	1,000		24.2		24	5.229	N.39° W.	6.8	
3 08.5	1,500		18.5		25	3.918	N.42° W.	9.1	
3 08.4	1,961	608.6	13.3	1.13	26	2.979	N.56° W.	7.6	
3 09.1	2,000		13.0		26	2.925	N.64° W.	7.1	
3 12.2	2,464	572.8	8.9	0.87	29	2.523	N.47° W.	8.0	
3 12.4	2,500		8.7		29	2.491	N.46° W.	7.7	
3 13.4	2,748	553.6	7.0	0.67	28	2.157	N.38° W.	10.7	
3 15.3	3,000		7.4		27	2.134	N.36° W.	14.3	
3 16.4	3,220	522.5	7.8	-0.17	27	2.190	N.38° W.	15.0	
3 18.7	3,500		5.8		25	1.731	N.43° W.	15.3	
3 19.1	3,542	502.5	5.5	0.71	25	1.747	N.45° W.	15.6	
3 20.3	3,740	490.5	5.8	-0.15	24	1.710	N.53° W.	16.0	
3 21.7	4,000		4.9		22	1.478	N.69° W.	14.9	
3 22.0	4,055	471.9	4.7	0.35	22	1.459	N.69° W.	15.0	
3 24.3	4,496	437.0	1.7	0.68	21	1.140	N.65° W.	17.3	
3 27.4	5,000		-2.5		21	0.833	N.66° W.	17.7	
3 27.8	5,098	414.4	-3.3	0.83	21	0.782	N.66° W.	17.6	
3 28.6	5,250	406.7	-5.0	1.12	21	0.681	N.67° W.	17.4	
3 33.0	6,000		-8.9		19	0.448	N.70° W.	21.8	
3 33.4	6,079	365.7	-9.3	0.52	19	0.434	N.70° W.	21.8	
3 38.0	6,946	326.6	-13.8	0.50	19	0.299	N.80° W.	24.1	
3 38.3	7,000		-14.0		19	0.289	N.80° W.	24.6	
3 39.6	7,308	311.4	-16.3	0.75	18	0.225	N.79° W.	23.6	
3 40.0	7,490	304.0	-18.8	1.28	18	0.188	N.79° W.	19.0	
3 43.3	8,000		-22.1		18	0.131	N.83° W.	28.8	
3 44.0	8,100	280.1	-22.8	0.66	18	0.123	N.81° W.	29.0	
3 47.8	8,954	249.6	-27.9	0.60	18	0.075	N.78° W.	30.8	
3 48.0	9,000		-25.2		18	0.073	N.78° W.	30.6	
3 51.6	9,806	221.4	-34.3	0.75	18	0.040	N.81° W.	36.8	
3 52.3	10,000		-35.8		18	0.034	N.85° W.	32.8	
3 55.6	10,742	193.8	-41.7	0.79	17	0.017	N.89° W.	31.1	
3 56.8	11,000		-43.7		17	0.013	N.83° W.	36.1	
3 59.9	11,734	167.4	-49.3	0.77	16	0.007	S.85° W.	31.8	
4 01.1	12,000		-50.9		16	0.005	S.88° W.	31.6	
4 03.0	12,486	149.6	-53.9	0.61	16	0.004	S.84° W.	32.6	
4 05.5	13,000		-55.6		15	0.003	S.77° W.	22.5	
4 06.4	13,364	131.0	-56.9	0.34	15	0.002	S.86° W.	27.0	
4 07.3	13,552	127.1	-58.3	0.74	15	0.002	N.89° W.	29.1	
4 10.1	14,000		-59.6		14	0.002	N.87° W.	19.2	
4 11.2	14,307	113.4	-60.5	0.29	14	0.001	N.87° W.	14.8	
4 14.6	15,000		-60.5		14	0.001	S.82° W.	22.9	
4 15.7	15,141	99.3	-60.5	0.00	14	0.001	W.	23.1	
4 18.2	15,936	87.8	-59.9	-0.08	14	0.001	S.48° W.	9.0	
4 18.4	16,000		-59.6		14	0.002	S.38° W.	7.7	
4 20.0	16,449	81.1	-57.8	-0.41	15	0.002	S.35° E.	8.6	
4 21.1	16,832	76.4	-56.0	-0.23	15	0.002	S.79° E.	13.4	
4 22.1	17,000		-55.5		15	0.003	Calm.	0.0	
4 22.7	17,099	73.1	-54.6	-0.86	15	0.003	N.79° W.	1.2	
4 24.4	17,675	67.2	-54.2	0.03	15	0.003	N.76° W.	6.4	
4 26.0	18,000		-53.4		15	0.004	Calm.	0.0	
4 27.9	18,496	55.2	-51.2	-0.44	15	0.005	N.	6.6	
4 30.1	19,000		-49.3		15	0.006	N.3° E.	4.2	
4 30.9	19,191	53.3	-48.6	-0.37	15	0.007	N.60° W.	6.7	
4 32.0	19,447	51.3	-46.2	-0.94	15	0.009	Calm.	0.0	
4 33.8	19,903	48.0	-44.9	-0.29	15	0.010	S.83° E.	14.2	
4 34.2	20,000		-44.0		15	0.011	S.83° E.	14.2	
4 34.5	20,080	46.7	-43.2	-0.96	15	0.013			

Balloon burst.

JULY 17, 1914 (Series No. 3).

TABLE 3.—Results of sounding balloon ascensions, Fort Omaha, Nebr.—Continued.

JULY 17, 1914 (Series No. 3)—Continued.

Time.	Altitude.	Pressure.	Temperature.	Δt 100 m.	Humidity.		Wind.		Remarks.
					Relative.	Absolute.	Direction.	Velocity.	
H. m. P. M.	M. Mm.	M. Mm.	°C. °F.		Per cent.	G./cu. m.		M.p.s.	
6 10.1	6,000	369.3	-6.5	0.50	13	0.373	N.66° W.	17.4	
6 15.8	6,722	330.7	-12.6	0.85	12	0.206	N.77° W.	18.3	
6 18.0	7,000		-14.5		13	0.189	N.80° W.	22.6	
6 22.8	7,721	295.2	-19.4	0.68	16	0.151	N.78° W.	28.5	
6 24.8	8,000		-21.5		16	0.124	N.76° W.	28.3	
6 28.2	8,602	261.4	-26.2	0.77	16	0.079	N.81° W.	27.3	
6 31.1	9,000		-30.0		16	0.055	N.82° W.	20.6	
6 32.9	9,293	238.2	-32.8	0.96	16	0.041	N.81° W.	22.5	
6 37.7	10,000		-39.9		14	0.017			
6 38.1	10,120	211.8	-40.5	1.00	14	0.016			
6 42.0	10,551	199.2	-46.0	1.28	14	0.009			
6 43.3	10,911	188.7	-48.4	0.67	14	0.007			
6 44.7	11,000		-48.7		14	0.006			
6 50.0	12,000		-51.9		12	0.004			
6 50.7	12,142	157.1	-52.3	0.32	12	0.003			
6 55.0	13,000		-55.8		11	0.002			
6 56.1	13,246	132.7	-56.8	0.41	11	0.002			
7 00.0	14,000		-57.9		11	0.002			
7 02.4	14,583	108.1	-58.7	0.14	11	0.001			
7 04.3	15,000		-57.2		11	0.002			
7 07.2	15,580	92.7	-55.2	-0.35	11	0.002			
7 08.3	16,000		-54.0		11	0.003			
7 12.0	17,000		-51.1		11	0.004			
7 12.3	17,089	73.7	-50.8	-0.29	11	0.005			
7 15.5	18,000		-48.7		11	0.006			
7 17.4	18,078	68.0	-47.2	-0.23	11	0.006			
7 19.0	19,000		-47.1		11	0.006			
7 22.0	19,970	47.8	-46.7	-0.04	11	0.006			
7 22.1	20,000		-46.7		11	0.006			
7 24.4	20,514	44.2	-46.6	0.00	11	0.006			
7 25.0	21,000		-44.2		11	0.008			
7 27.0	22,000		-39.2		11	0.011			
7 28.7	22,092	30.8	-34.1	-0.50	11	0.025			
7 30.3	24,000		-31.8		11	0.031			
7 31.5	25,000		-29.5		11	0.039			
7 32.4	25,953	20.3	-27.4	-0.23	11	0.048			

Few St.Cu. on northern horizon.

Balloon burst.

JULY 17, 1914 (Series No. 4).

Time.	Altitude.	Pressure.	Temperature.	Δt 100 m.	Humidity.		Wind.		Remarks.
					Relative.	Absolute.	Direction.	Velocity.	
P. M.					Per cent.	G./cu. m.		M.p.s.	
8 10.0	312	735.6	24.2		43	9.369	N.11° E.	4.	
8 11.1	500		25.7		41	9.720	N.13° E.	3.8	
8 11.3	555	715.3	21.6	-0.78	40	9.697	N.14° E.	3.5	
8 13.9	1,000		22.1		38	7.346	N.11° W.	7.3	
8 14.1	1,043	676.3	21.7	0.90	38	7.179	N.16° W.	7.0	
8 18.8	1,500		17.9		40	6.051	N.48° W.	6.5	
8 17.0	1,531	638.9	17.6	0.84	40	5.914	N.49° W.	6.5	
8 19.6	2,000		12.1		43	4.575	N.49° W.	9.6	
8									

TABLE 3.—*Results of sounding balloon ascensions, Fort Omaha, Nebr.—Continued.*

JULY 17 AND 18, 1914 (Series No. 5).

Time.	Altitude.	Pressure.	Temperature.	$\frac{\Delta t}{100 \text{ m.}}$	Humidity.		Wind.		Remarks.
					Relative.	Absolute.	Direction.	Velocity.	
H. m.	M.	Mm.	°C.		Per cent.	G./cu. m.		M.p.s.	
P. M.									
10 34.0	312	736.6	16.7		77	10.844	N. 32° E.	7.6	
10 34.4	429	726.6	21.0	-3.68			N. 32° E.	7.6	
10 35.0	500		23.4				N. 32° E.	7.6	
10 35.3	514	719.5	22.7	-2.00			N. 32° E.	7.6	
10 36.2	688	705.2	22.7	0.00			N. 32° E.	7.6	
10 38.2	1,000		20.7				N. 11° E.	5.6	
10 38.6	1,074	674.3	20.2	0.05			N. 2° E.	5.4	
10 40.5	1,398	649.3	18.5	0.52			N. 35° W.	6.4	
10 41.1	1,500		17.8				N. 40° W.	7.0	
10 44.0	2,000		14.4				N. 48° W.	11.2	
10 45.2	2,219	589.3	12.9	0.68			N. 50° W.	12.9	
10 46.5	2,500		10.9				N. 46° W.	15.3	
10 47.1	2,607	562.5	10.2	0.70			N. 43° W.	18.2	
10 49.4	2,948	539.7	8.2	0.59			N. 34° W.	14.7	
10 50.1	3,000		7.8				N. 35° W.	14.5	
10 51.7	3,277	518.5	5.5	0.82			N. 38° W.	14.2	
10 53.0	3,507	504.0	5.1	0.17			N. 41° W.	14.2	
10 54.0	3,613	497.4	5.5	-0.38			N. 42° W.	14.2	
10 56.3	4,000		3.2				N. 48° W.	14.8	
10 58.0	4,291	457.8	1.4	0.60			N. 57° W.	12.9	
10 59.5	4,500		0.0				N. 61° W.	11.7	
11 01.7	4,836	426.3	-2.4	0.67			N. 57° W.	13.1	
11 02.5	5,000		-3.2				N. 58° W.	12.3	
11 05.5	5,495	393.4	-5.8	0.53			N. 61° W.	16.0	
11 08.8	6,006	368.6	-7.6	0.35			N. 60° W.	16.1	
11 13.7	6,842	330.7	-13.4	0.60					
11 14.8	7,000		-14.4						
11 19.0	7,725	294.4	-19.1	0.65					
11 21.0	8,000		-20.5						
11 22.8	8,278	273.7	-22.0	0.52					
11 26.3	8,701	258.0	-24.3	0.54					
11 27.3	9,000		-26.3						
11 31.3	9,641	227.0	-30.6	0.67					
11 33.9	10,000		-33.2						
11 38.7	10,402	203.8	-38.1	0.72					
11 40.4	11,000		-40.3						
11 41.9	11,239	181.1	-42.0	0.71					
11 46.8	12,000		-46.2						
11 47.3	12,101	159.4	-46.7	0.64					
11 52.0	12,888	141.7	-50.6	0.51					
11 53.0	13,000		-51.2						
11 58.4	13,777	124.1	-54.9	0.47					
11 59.5	14,000		-55.7						
A. M.									
12 04.2	14,842	105.2	-58.5	0.34					
12 05.6	15,000		-58.5						
12 08.3	15,414	96.4	-58.7	0.03					
12 09.4	15,584	93.8	-59.7	0.50					
12 11.8	16,000		-59.0						
12 14.1	16,541	81.1	-58.1	-0.17					
12 17.4	16,830	77.6	-56.7	-0.48					
12 18.3	17,000		-56.4						
12 22.2	17,276	72.3	-56.0	-0.10					
12 26.3	17,837	67.1	-54.1	-0.31					

JULY 18, 1914 (Series No. 6).

A. M.	Cloudless.								
	107.0	312	736.9	18.3		71	10.998	N. 60° E.	7.7
107.6	488	721.8	19.2	-0.51	64	10.454	N. 60° E.	7.7	
107.9	500		19.3		64	10.515	N. 60° E.	7.7	
108.4	620	710.1	20.9	-1.21	59	10.642	N. 60° E.	7.7	
109.7	895	688.4	20.9	0.00	50	9.018	N. 46° E.	7.4	
110.3	1,000		20.4		49	8.585	N. 41° E.	7.6	
112.7	1,500		17.8		43	6.466	N. 79° W.	6.2	
113.2	1,640	631.0	17.1	0.51	41	5.914	N. 63° W.	6.6	
115.1	2,000		13.8		41	4.814	N. 51° W.	8.7	
116.3	2,220	589.1	11.7	0.93	41	4.255	N. 60° W.	10.5	
117.5	2,500		10.0		43	4.011	N. 52° W.	13.3	
119.7	2,991	536.7	7.0	0.01	47	3.620	N. 38° W.	14.8	
122.5	3,500		3.0		55	3.257	N. 32° W.	19.1	
123.3	3,734	489.8	1.1	0.79	59	3.073	N. 35° W.	19.8	
124.2	3,839	483.5	1.3	-0.19	57	3.011	N. 41° W.	19.0	
125.0	4,000		0.2		58	2.813	N. 40° W.	18.3	
125.8	4,177	463.4	-1.0	0.68	59	2.636	N. 50° W.	16.7	
127.6	4,500		-1.2		52	2.287	N. 55° W.	14.4	
127.8	4,589	440.2	-1.3	0.07	50	2.182	N. 55° W.	14.5	
130.2	5,000		3.9		43	1.525	N. 57° W.	16.1	
131.1	5,189	407.9	-5.1	0.93	40	1.287	N. 57° W.	16.8	
134.3	5,793	377.6	-8.5	0.56	34	0.828	N. 66° W.	14.2	
135.3	6,000		-9.2		32	0.737	N. 70° W.	14.2	
135.7	6,114	362.4	-9.6	0.34	31	0.690	N. 70° W.	14.2	
137.6	6,475	345.7	-10.4	0.22	26	0.541			
140.6	7,000		-13.0		23	0.381			
141.6	7,252	312.7	-14.2	0.49	22	0.328			
144.4	7,312	302.7	-17.9	0.66	26	0.283			
145.5	8,000		-19.1		28	0.272			

TABLE 3.—*Results of sounding balloon ascensions, Fort Omaha, Nebr.—Continued.*

JULY 18, 1914 (Series No. 6)—Continued.

Time.	Altitude.	Pressure.	Temperature.	$\frac{\Delta t}{100 \text{ m.}}$	Humidity.		Wind.		Remarks.
					Relative.	Absolute.	Direction.	Velocity.	
H. m.	M.	Mm.	°C.		Per cent.	G./cu. m.		M.p.s.	
A. M.									
1 47.2	8,367	269.3	-21.4	0.63	31	0.241			
	9,000		-25.1		31	0.171			
	10,000		-31.0		32	0.099			
	11,000		-36.9		32	0.054			
	12,000		-42.8		33	0.029			
	13,000		-48.7		33	0.015			
	14,000		-54.6		31	0.007			
	15,000		-60.5		31	0.001			
	16,000		-66.4		31				
	16,372	87.2	-67.1	0.59	34	0.001			
	16,721	78.4	-68.9	0.57	35	(*)			
	17,000		-68.8	0.03	34				
	17,560	68.5	-68.7	-0.02	31	(*)			

JULY 18, 1914 (Series No. 7).

A. M.	Cloudless.								
	6 05.0	312	738.8	16.7		77	10.844	S. 70° E.	2.7
6 06.4	500							S. 66° E.	5.7
6 10.1	1,000							N. 87° E.	2.0
6 13.8	1,500							N. 27° W.	5.7
6 17.4	2,000							N. 42° W.	7.6
6 21.0	2,500							N. 47° W.	9.6
6 24.4	3,000							N. 35° W.	14.6
6 27.8	3,500							N. 38° W.	14.4
6 31.0	4,000							N. 47° W.	14.8
6 34.0	4,500							N. 53° W.	16.2
6 37.0	5,000							N. 63° W.	16.4
6 40.0	5,210							N. 76° W.	8.5

*Less than 0.0005 g./cu. m.

MONTHLY WEATHER REVIEW.

MAY, 1916

TABLE 3.—Results of sounding balloon ascensions, Fort Omaha, Nebr.—Continued.

JULY 18, 1914 (Series No. 9).

Time.	Altitude.	Pressure.	Temperature.	Δt 100 m.	Humidity.		Wind.		Remarks.
					Relative.	Absolute.	Direction.	Velocity.	
H. m.	M.	Mm.	°C.		Per cent.	G./cu. m.		M.p.s.	
8 30.0	312	739.4	19.1		70	11.367	S. 70° E.	2.7	10/10 A. St., wnw.
8 31.0	500	718.1	18.1		70	10.716	S. 56° E.	4.0	Solar halo.
8 31.7	566	717.7	17.7	0.55	70	10.464	S. 40° E.	4.9	
8 32.7	707	705.9	19.2	-1.06	67	10.944	S. 34° E.	3.2	
8 34.1	953	685.9	18.8	0.16	60	9.572	S. 26° W.	2.2	
8 34.3	1,000	685.9	19.0		58	9.363	S. 36° W.	2.1	
8 34.9	1,079	675.9	19.2	-0.32	55	9.894	S. 88° W.	1.8	
8 36.8	1,500	671.8	18.1		49	7.501	N. 77° W.	4.5	
8 38.3	1,732	626.0	17.6	0.25	46	6.836	N. 53° W.	5.4	
8 39.7	2,000	15.6			49	6.459	N. 73° W.	6.2	
8 41.2	2,217	591.1	14.0	0.74	51	6.100	N. 69° W.	6.2	
8 42.5	2,500	12.7			57	6.294	N. 60° W.	9.3	A. St. lowered and thickened during ascension.
8 43.5	2,627	562.9	12.1	0.46	58	6.171	N. 54° W.	10.7	
8 45.0	2,849	548.0	11.0	0.50	61	6.060	N. 47° W.	13.3	
8 45.6	3,000	10.2			63	5.952	N. 45° W.	12.5	
8 48.4	3,500	7.7			71	5.721	N. 31° W.	9.4	
8 49.4	3,659	497.0	6.9	0.51	73	5.587	N. 28° W.	9.1	
8 50.9	3,903	482.3	5.5	0.57	71	4.961	N. 33° W.	10.1	
8 51.3	4,000	5.1			72	4.900	N. 37° W.	10.3	
8 53.4	4,364	455.9	3.4	0.46	76	4.622	N. 62° W.	10.7	Thin clouds passing under balloon.
8 54.2	4,500	3.3			78	4.713	N. 69° W.	10.7	
8 54.5	4,568	444.5	3.3	0.05	79	4.773	N. 71° W.	10.7	Clock stopped.
8 55.5	4,717	436.4	2.6	0.47	80	4.613	N. 73° W.	10.5	
8 56.8	5,000						N. 66° W.	10.1	
9 02.4	6,000						N. 74° W.	13.9	
9 08.3	7,000						N. 74° W.	21.1	Balloon disappeared in clouds.
9 11.0									

JULY 18, 1914 (Series No. 10).

A. M.					Clouds becoming heavier and lower.			
					Relative.	Absolute.		
11 00.0	312	739.5	21.1		62	11.314	S. 19° E.	1.6
11 01.2	496	723.8	20.8	0.16	60	11.836	S. 16° E.	2.0
11 03.0	786	609.7	17.3	1.13	67	9.780	S. 13° W.	5.7
11 04.2	974	684.3	16.5	0.43	68	9.463	S. 6° W.	4.3
11 04.4	1,000	16.8			67	9.493	S. 5° W.	4.1
11 04.9	1,059	677.5	17.6	-1.29	65	9.659	S. 20° W.	3.7
11 06.4	1,230	664.0	17.3	0.13	59	8.612	S. 58° W.	5.9
11 08.3	1,500	16.1			56	7.608	S. 69° W.	7.1
11 09.4	1,693	628.7	15.2	0.45	54	6.945	S. 71° W.	6.4
11 12.0	2,000	13.1			53	6.000	S. 71° W.	5.3
11 12.8	2,189	594.1	12.0	0.67	52	5.498	S. 71° W.	5.3
11 15.3	2,500	9.5			53	4.791	N. 74° W.	3.9
11 16.1	2,614	563.1	8.6	0.76	53	4.524	N. 68° W.	3.8
11 17.5	2,825	548.7	8.0	0.28	55	4.518	N. 42° W.	4.3
11 18.9	3,000	7.0			57	4.391	N. 18° W.	5.7
11 22.2	3,500	4.1			61	3.887	N. 21° W.	4.6
11 22.6	3,602	499.2	3.5	0.53	62	3.796	N. 24° W.	4.5
11 25.4	4,000	0.8			63	3.217	N. 72° W.	7.7
11 27.0	4,260	460.0	-1.0	0.69	64	2.840		
11 28.5	4,506	445.9	-2.3	0.53	67	2.702		
11 31.7	5,000	-3.8			71	2.539		
11 32.1	5,044	16.8	-3.9	0.30	71	2.518		
11 32.6	5,133	412.1	-3.4	-0.57	71	2.623		
11 34.5	5,459	395.4	-5.0	0.38	70	2.271		
11 37.4	6,057	366.2	-8.8	0.64	70	1.665		
11 40.4	6,691	337.3	-10.5	0.27	71	1.466		
11 41.6	7,000	-11.6			71	1.333		
11 43.3	7,574	300.8	-13.5	0.34	71	1.126		
11 45.3	8,000	-15.2			70	0.960		
11 46.3	8,255	275.1	-16.3	0.41	70	0.874		
11 49.0	9,000	-20.2			69	0.603		
11 50.0	9,370	237.1	-22.2	0.53	69	0.490		
11 52.0	10,000	-26.7			69	0.324		
11 52.3	10,099	214.5	-27.4	0.71	69	0.302		
11 53.2	10,411	205.4	-30.2	0.90	69	0.232		

JULY 18, 1914 (Series No. 11).

P. M.					Balloon disappeared in clouds.			
					Relative.	Absolute.		
1 32.0	312	738.8	25.1		57	13.066	S. 1° W.	3.5
1 32.9	486	724.2	22.2	1.67	59	11.471	S. 1° W.	3.5
1 33.1	500	22.0			59	11.340	S. 5° W.	4.0
1 34.7	791	699.0	19.3	0.95	64	10.515	S. 20° W.	4.9
1 35.3	854	693.8	19.7	-0.03	61	10.280	S. 40° W.	5.3
1 36.4	1,000	18.9			60	9.628	S. 63° W.	4.7
1 38.5	1,385	651.9	16.9	0.53	58	7.982	S. 62° W.	4.8
1 39.6	1,500	16.4			55	7.608	S. 56° W.	5.0
1 42.0	1,886	614.4	14.9	0.40	51	6.441	S. 44° W.	3.1
1 42.7	2,000	14.2			52	6.296	S. 44° W.	2.7
1 45.8	2,500	11.2			58	5.834	S. 59° W.	1.7
1 47.3	2,707	357.1	9.9	0.61	60	5.563	S. 72° W.	1.3
1 48.7	3,000	8.0			63	5.175	S. 82° W.	1.1
1 50.2	3,247	321.9	6.4	0.65	66	4.890	S. 78° W.	2.8
1 51.5	3,500	4.0			69	4.368	S. 75° W.	4.2

TABLE 3.—Results of sounding balloon ascensions, Fort Omaha, Nebr.—Continued.

JULY 18, 1914 (Series No. 11)—Continued.

Time.	Altitude.	Pressure.	Temperature.	Δt 100 m.	Humidity.		Wind.		Remarks.
					Relative.	Absolute.	Direction.	Velocity.	
H. m.	M.	Mm.	°C.		Per cent.	G./cu. m.		M.p.s.	
P. M.									
1 53.0	3,765	489.5	1.6		0.93	73	3.935	S. 80° W.	5.9
1 54.1	4,000		1.2			78	4.093		
1 55.1	4,188	464.7	0.8		0.19	82	4.187		
1 56.4	4,443	450.0	-0.5		0.50	84	3.904		
1 56.7	4,500		-0.2			81	3.855		
1 57.3	4,619	440.2	0.3		-0.45	76	3.751		
1 59.1	5,000		-2.1			70	2.869		
1 59.6	5,115	413.4	-2.9		0.64	68	2.614		
2 00.3	5,285	406.1	-2.9		0.00	66	2.537		
2 02.2	5,628	387.8	-1.8		0.52	66	2.177		
2 03.8	6,000		-25.9			68	1.796		
2 05.2	6,364	352.9	-10.1		0.72	69	1.474		
2 07.1	6,791	333.7	-10.7		0.14	72	1.461		
2 08.0	7,000		-12.1			72	1.292		
2 10.1	7,542	302.8	-15.9		0.69	73	0.944		
2 12.0	8,000		-18.7			74	0.740		
2 13.1	8,375	270.8	-21.0		0.61	74	0.599		
2 15.0	9,000		-25.9			73	0.372		
2 17.2	9,486	232.9	-29.8		0.79	73	0.255		
2 19.0	10,000		-33.0			73	0.184		
2 21.2	10,049	197.8	-37.1		0.63	73	0.120		
2 22.2	11,000		-40.1			72	0.085		
2 25.1	11,894	165.0	-47.7		0.85	70	0.036		
2 25.4	12,000		-48.5			69	0.032		
2 28.1	13,000		-56.3			68	0.012		
2 29.1	13,295	133.6	-58.6		0.78	68	0.009		
2 30.7	13,388	130.0	-63.1		-0.26	68	0.010		
2 30.6	13,395	120.6	-60.2		0.45	67	0.007		
2 31.1	14,000		-60.1			67	0.007		
2 31.8	1								

TABLE 3.—Results of sounding balloon ascensions, Fort Omaha, Nebr.—Continued.

JULY 18, 1914 (Series No. 12)—Continued.

Time.	Altitude.	Presure.	Tempera-ture.	Δt 100 m.	Humidity.		Wind.		Remarks.
					Relative.	Absolute.	Direction.	Velocity.	
<i>H. m.</i>	<i>M.</i>	<i>Mm.</i>	<i>°C.</i>		<i>Per cent.</i>	<i>G./cu. m.</i>		<i>M.p.s.</i>	
P. M.									
5 13.1	13,891	123.3	-60.3	0.88	40	0.004			
5 13.5	14,000		-60.5		40	0.004			
5 15.5	14,595	110.4	-61.8	0.21	40	0.003			
5 17.1	15,000		-64.0		40	0.002			
5 19.0	15,565	94.8	-67.0	0.54	40	0.001			
5 20.2	16,000		-64.9		40	0.002			
5 21.4	16,407	83.1	-63.0	-0.48	40	0.002			
5 23.0	17,000		-61.7		40	0.003			
5 24.5	17,624	68.7	-60.3	-0.22	41	0.004			
5 25.5	18,000		-60.3		41	0.004			
5 26.2	18,327	61.4	-60.3	0.00	41	0.004			
5 28.0	19,000		-57.7		41	0.006			
5 30.2	19,817	48.7	-54.6	-0.38	41	0.009			
5 30.4	20,000		-54.7		41	0.009			
5 31.3	20,422	44.5	-54.9	0.05	41	0.009			
5 32.5	21,000		-53.5		41	0.010			
5 34.3	22,000		-51.1		41	0.014			
5 35.9	22,930	30.3	-49.0	-0.24	41	0.018			

JULY 19, 1914.

P. M.									
4 03.0	312	736.0	30.1		44	13.288	S. 43° W.	3.8	4/10 Cu., w.
4 04.0	500		27.9		46	12.321	S. 48° W.	4.2	
4 04.4	590	713.2	26.8	1.19	47	11.846	S. 52° W.	4.6	
4 06.3	920	686.7	24.9	0.58	45	10.200	S. 55° W.	4.3	
4 07.0	1,000		24.0		46	9.910	S. 58° W.	4.2	
4 08.8	1,311	666.5	20.7	1.07	52	9.273	S. 60° W.	4.1	
4 10.2	1,500		19.4		55	9.030	S. 77° W.	4.4	
4 12.7	1,895	613.2	16.8	0.67	62	8.781	N. 44° W.	2.6	
4 13.3	2,000		15.9		64	8.591	N. 29° W.	1.9	
4 15.3	2,427	575.7	12.3	0.85	71	7.648	N. 58° E.	2.7	
4 15.7	2,500		12.0		70	7.402	N. 49° E.	2.9	
4 16.4	2,701	557.0	11.2	0.40	66	6.639	N. 33° E.	3.2	
4 18.1	3,000		9.7		64	5.853	N. 4° W.	2.3	
4 20.8	3,500		7.3		62	4.869	N. 15° W.	4.1	
4 21.2	3,603	499.4	6.8	0.40	61	4.038	N. 19° W.	4.2	
4 23.5	4,000		5.3		48	3.310	N. 62° W.	2.7	
4 24.7	4,235	462.4	4.4	0.38	41	2.665	N. 65° W.	2.8	
4 26.2	4,500		3.7		37	2.296	N. 73° W.	4.7	
4 27.9	4,768	432.9	2.9	0.28	33	1.941	N. 71° W.	6.4	
4 29.0	5,000		1.7		31	1.683	N. 64° W.	7.0	
4 31.4	5,440	398.3	-0.5	0.51	27	1.255	N. 44° W.	12.1	
4 33.6	5,891	376.4	-3.5	0.67	26	0.953	N. 44° W.	11.5	
4 34.3	6,007	371.0	-3.1	-0.34	25	0.946	N. 46° W.	11.2	
4 35.3	6,163	363.8	-4.6	0.96	24	0.804	N. 49° W.	11.1	
4 36.9	6,442	351.0	-6.8	0.79	23	0.644	N. 54° W.	11.4	
4 38.3	6,774	336.5	-6.8	0.00	22	0.616	N. 54° W.	12.4	
4 39.1	6,939	329.3	-8.6	1.09	22	0.532	N. 54° W.	13.0	
4 39.8	7,000		8.8		22	0.523	N. 56° W.	13.4	
4 41.0	7,288	314.9	-9.9	0.37	22	0.478	N. 59° W.	14.7	
4 43.0	7,600	302.4	-11.6	0.54	21	0.394	N. 62° W.	15.8	
4 45.0	8,000		-15.0		20	0.279	N. 62° W.	15.7	
4 46.1	8,214	279.0	-16.8	0.85	20	0.239	N. 59° W.	16.4	
4 49.5	8,923	253.9	-20.4	0.51	20	0.172	N. 62° W.	19.3	
4 50.1	9,000		-20.7		20	0.167	N. 66° W.	21.1	
4 54.0	9,808	225.5	-24.4	0.45	19	0.112	N. 74° W.	25.5	
4 54.9	10,000		-25.4		19	0.102	N. 69° W.	29.4	2/10 Cu., w.
4 59.2	10,996	191.4	-30.5	0.51	18	0.059	N. 69° W.	33.5	
5 03.8	12,000		-39.6		17	0.021			
5 04.3	12,088	164.4	-40.4	0.91	17	0.019			
5 05.9	12,538	153.7	-44.7	0.95	17	0.012			
5 07.4	12,676	150.3	-46.4	1.24	17	0.010			
5 07.9	13,000		-48.4		17	0.008			
5 10.0	13,548	132.3	-51.7	0.01	18	0.005			
5 11.5	14,000		-52.6		18	0.004			
5 12.9	14,514	114.3	-53.5	0.19	16	0.004			
5 14.9	15,000		-54.5		15	0.003			
5 16.9	15,643	96.3	-55.8	0.20	14	0.003			
5 17.8	16,000		-56.1		14	0.003			
5 20.3	17,000		-56.9		14	0.002			
5 20.8	17,117	76.8	-57.0	-0.08	14	0.002			
5 22.4	17,943	67.7	-56.3	-0.08	15	0.003			
5 22.8	18,000		-56.3		15	0.003			
5 24.1	18,653	60.7	-56.8	0.07	15	0.002			
5 25.0	19,000		-55.8		15	0.003			
5 26.5	19,940	49.8	-52.9	-0.30	16	0.004			
5 27.1	20,000		-52.9		16	0.004			
5 28.0	20,457	46.1	-52.7	-0.04	16	0.004			
5 29.5	21,000		-49.9		16	0.006			
5 31.5	21,546	39.2	-47.2	-0.51	16	0.009			
5 32.0	22,000		-46.3		16	0.009			
5 34.2	23,000		-44.3		16	0.010			
5 35.9	23,760	28.2	-42.8	-0.20	16	0.014			
5 36.7	24,000		-41.9		16	0.016			
5 39.3	25,000		-38.1		17	0.025			
5 39.9	25,140	23.1	-37.5	-0.38	17	0.027			
5 42.1	26,000		-36.4		16	0.028			
5 44.8	27,000		-36.9	-0.18	16	0.030			
5 46.8	27,782	15.8	-37.9	0.14	16	0.024			

TABLE 3.—Results of sounding balloon ascensions, Fort Omaha, Nebr.—Continued.

JULY 20, 1914.

Time.	Altitude.	Presure.	Tempera-ture.	Δt 100 m.	Humidity.		Wind.		Remarks.
					Relative.	Absolute.	Direction.	Velocity.	
<i>H. m.</i>	<i>M.</i>	<i>Mm.</i>	<i>°C.</i>		<i>Per cent.</i>	<i>G./cu. m.</i>		<i>M.p.s.</i>	
P. M.									
4 01.0	312	733.0	24.7		66	14.793	S. 55° E.	2.2	7/10 A.St., w.
4 01.9	472	719.6	21.8	1.81	68	12.920	S. 47° E.	4.2	3/10 St.Cu., w.
4 02.3	500		21.5		69	12.886	S. 34° E.	6.2	
4 03.2	635	704.2	19.8	1.23	72	12.182	S. 16° E.	8.6	
4 04.1	839	687.9	18.7	0.49	72	11.419	S. 7° W.	10.7	
4 05.7	1,000		17.6		73	10.848	S. 18° W.	11.3	
4 06.7	1,108	668.0	16.7	0.80	74	10.421	S. 27° W.	11.7	
4 09.0	1,450	611.6	16.5	0.06	68	9.463	S. 41° W.	7.6	
4 09.2	1,500		16.1		69	9.374	S. 41° W.	7.5	
4 12.2	2,000		12.6		75	8.230	S. 46° W.	6.8	
4 12.4	2,029	599.0	12.4	0.71	75	8.129	S. 46° W.	6.9	
4 14.9	2,500		9.2		86	7.627	S. 48° W.	6.1	
4 16.3	2,778	547.2	7.4	0.67	92	7.272	S. 52° W.	6.8	
4 17.7	3,000		6.1		95	6.903	S. 56° W.	6.8	
4 19.5	3,327	511.9	4.1	0.60	100	6.372	S. 58° W.	5.9	
4 20.7	3,500		3.4		97	5.900	S. 55° W.	5.2	
4 22.0	3,686	489.5	2.7	0.39	93	5.400	S. 58° W.	4.1	
4 22.7	4,000		0.8		94	4.800	S. 86° W.	4.0	
4 24.7	4,144	462.4	-0.1	0.61	94	4.508	W.	4.2	
4 26.7	4,500		-1.3		97	4.233	S. 81° W.	5.1	
4 29.0	4,888	421.2	-2.7	0.35	100	3.906	S. 88° W.	5.5	
4 29.6	5,000		-3.2		99	3.716			
4 34.4	5,960	367.8	-7.3	0.43	90	2.416			
4 34.7	6,000		-7.5		90				

TABLE 3.—*Results of sounding balloon ascensions, Fort Omaha, Nebr.—Continued.*

JULY 21, 1914—Continued.

Time.	Altitude.	Pressure.	Temper-	Tem- per- ature.	Δt 100 m.	Humidity.		Wind.		Remarks.
						Rel- ative.	Absolu- te.	Direction.	Ve- locity.	
				$^{\circ}C.$		Per cent.	G./cu. m.		M.p.s.	
H. m.	M.	Mm.								
P. M.										
4 30.9	6,000		— 3.1	— 6.9	20	0.757	N. 75° W.	1.2		
4 33.9	6,580	344.6	— 6.9	0.64	19	0.527	N. 58° W.	3.4		
4 35.8	6,934	328.8	— 8.1	0.34	18	0.453	N. 78° W.	4.2		
4 36.1	7,000		— 8.5		18	0.438	N. 79° W.	4.0		
4 41.0	7,988	257.8	— 14.2	0.59	16	0.239	N. 55° W.	8.2		
4 41.2	8,000		— 14.4		16	0.235	N. 58° W.	8.0		
4 45.0	8,788	257.9	— 20.2	0.73	16	0.149	S. 85° W.	6.9		
4 46.0	9,000		— 20.3		16	0.139	S. 86° W.	7.4		
4 48.9	9,646	220.8	— 25.4	0.61	16	0.086	N. 33° W.	8.0		
4 50.6	10,000		— 27.8		15	0.063	N. 72° W.	10.9		
4 51.2	10,110	215.7	— 28.6	0.69	14	0.054	N. 70° W.	11.5		
4 54.5	11,000		— 33.7		14	0.033	N. 68° W.	17.7		
4 55.0	11,104	187.8	— 34.3	0.57	14	0.031	N. 68° W.	19.0		
4 56.0	11,161	186.2	— 34.9	1.05	14	0.028	N. 70° W.	22.6		
4 59.0	12,000		— 38.3		19	0.020	N. 64° W.	24.5		
4 59.5	12,110	162.8	— 38.7	0.40	14	0.019	N. 64° W.	23.9		
5 03.0	13,000		— 45.2		14	0.009	N. 65° W.	22.0		
5 03.4	13,110	141.0	— 46.0	0.73	14	0.009	N. 65° W.	22.5		
5 06.5	14,000		— 49.4		13	0.005	N. 59° W.	16.7		
5 07.2	14,303	118.1	— 50.5	0.38	13	0.005	N. 58° W.	14.1		
5 09.7	15,000		— 53.9		13	0.003	N. 69° W.	16.1		
5 10.5	15,340	101.1	— 55.6	0.49	13	0.002	N. 89° W.	17.4		
5 11.5	15,750	95.0	— 55.1	-0.12	13	0.003	N. 75° W.	17.8		

TABLE 3.—*Results of sounding balloon ascensions, Fort Omaha, Nebr.—Continued.*

JULY 21, 1914—Continued.

Time.	Altitude.	Pres- sure.	Tem- per- ature.	Δt 100 m.	Humidity.		Wind.		Remarks.
					Rel- ative.	Absolu- te.	Direction.	Ve- locity.	
H. m.	M.	Mm.	$^{\circ}C.$		Per cent.	G./cu. m.		M.p.s.	
P. M.									
5 12.4	16,000		— 56.1		13	0.002	N. 84° W.	17.8	
5 13.8	16,636	82.8	— 58.6	0.40	13	0.002	N. 64° W.	13.8	Cloudless.
5 15.0	17,000		— 60.9		13	0.002	N. 27° W.	7.8	
5 16.0	17,402	73.5	— 55.0	-0.47	13	0.003			Balloon burst.

JULY 22, 1914.

P. M.									
4 00.0	312	733.3	33.8		45	16.557	N. 78° W.	3.4	6/10 St.Cu., sw.
4 02.1	496	718.3	30.9	1.58	46	14.505	N. 79° W.	4.7	
4 04.2	518	692.8	27.9	0.94	54	14.463	S. 70° W.	4.4	
4 04.8	1,000		26.0		58	13.933	S. 53° W.	4.2	
4 07.1	1,500		20.9		70	12.626	S. 47° W.	6.5	
4 07.2	1,522	638.9	20.7	1.02	71	12.659	S. 47° W.	6.7	
4 09.3	1,850	615.0	17.6	0.95	74	10.996	S. 35° W.	12.3	
4 10.0	2,000		17.8		64	9.621	S. 36° W.	14.4	
4 10.4	2,035	601.7	17.8	-0.11	63	9.474	S. 37° W.	15.7	
4 11.6	2,226	588.3	17.3	0.26	57	8.320	S. 38° W.	17.5	
4 12.1	2,464	571.9	16.0	0.55	55	7.427			1 balloon burst.

TABLE 4.—*Absolute humidity (grams per cubic meter) at varying levels on different dates, Fort Omaha, Nebr., 1914.**

Date.	Altitude (meters).																		
	312	500	1,000	1,500	2,000	2,500	3,000	3,500	4,000	4,500	5,000	6,000	7,000	8,000	9,000	10,000	11,000	12,000	
1914.	<i>G./cu. m.</i>	<i>G./cu. m.</i>	<i>G./cu. m.</i>	<i>G./cu. m.</i>	<i>G./cu. m.</i>	<i>G./cu. m.</i>	<i>G./cu. m.</i>	<i>G./cu. m.</i>	<i>G./cu. m.</i>	<i>G./cu. m.</i>	<i>G./cu. m.</i>	<i>G./cu. m.</i>	<i>G./cu. m.</i>	<i>G./cu. m.</i>	<i>G./cu. m.</i>	<i>G./cu. m.</i>	<i>G./cu. m.</i>	<i>G./cu. m.</i>	
	14.955	12.700	10.251	9.547	3.323	2.723	2.451	2.121	2.066	1.662	0.685	0.373	0.191	0.085	0.038	0.015	0.006		
	July 9.....	14.955	12.700	10.251	9.547	3.323	2.723	2.451	2.121	2.066	1.662	0.685	0.373	0.191	0.085	0.038	0.015	0.006	
	July 11.....	20.212	16.398	13.155	11.572	5.613	3.858	2.713	1.976	1.310	0.812	0.410	0.203	0.087	0.038	0.024	0.009	0.003	
	July 14.....	15.278	14.196	11.509	9.232	5.782	3.271	2.087	1.237	0.939	0.654	0.483	0.266	0.107	0.077	0.044	0.024	0.011	0.004
	July 15.....	19.064	16.400	12.767	11.148	10.426	8.474	6.261	4.739	3.745	3.165	2.749	2.366	1.292	0.710	0.429	0.211	0.141	-----
	July 17, No. 2.....	6.651	6.797	5.229	3.918	2.925	2.401	2.131	1.781	1.478	1.140	0.823	0.448	0.289	0.131	0.073	0.034	0.013	0.005
	July 18, No. 12.....	12.561	11.205	9.681	8.489	7.614	6.209	5.498	5.001	4.675	3.703	2.728	1.161	0.641	0.548	0.333	0.183	0.084	0.033
	July 19.....	13.288	12.321	9.910	9.030	8.591	7.402	5.859	4.863	3.310	2.296	1.683	0.946	0.523	0.279	0.167	0.102	0.050	0.021
	July 20.....	11.793	12.886	10.848	9.374	8.230	7.627	6.903	5.900	4.800	4.233	3.716	2.377	1.693	1.015	0.520	0.265	0.119	0.071
	July 21.....	16.398	15.299	13.633	13.120	11.876	8.926	5.116	2.917	2.122	1.468	1.227	0.757	0.438	0.235	0.139	0.063	0.033	0.020
Means.....	14.800	13.144	10.782	9.502	7.432	5.860	4.463	3.509	2.790	2.181	1.722	1.046	0.618	0.364	0.206	0.107	0.060	0.020	

Date.	Altitude (meters).																		
	13,000	14,000	15,000	16,000	17,000	18,000	19,000	20,000	21,000	22,000	23,000	24,000	25,000	26,000	27,000	28,000	29,000	30,000	31,000
1914.	<i>G./cu. m.</i>	<i>G./cu. m.</i>	<i>G./cu. m.</i>	<i>G./cu. m.</i>	<i>G./cu. m.</i>	<i>G./cu. m.</i>	<i>G./cu. m.</i>	<i>G./cu. m.</i>	<i>G./cu. m.</i>	<i>G./cu. m.</i>	<i>G./cu. m.</i>	<i>G./cu. m.</i>	<i>G./cu. m.</i>	<i>G./cu. m.</i>	<i>G./cu. m.</i>	<i>G./cu. m.</i>	<i>G./cu. m.</i>	<i>G./cu. m.</i>	
	0.005	0.005	0.003	0.002	0.004	0.002	0.002	0.003	0.004	0.006	0.008	0.010	0.013	0.018	0.028	0.070	0.083	0.104	0.116
	July 9.....	0.005	0.005	0.003	0.002	0.004	0.002	0.002	0.003	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	July 11.....	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.003	0.004	0.005	0.006	0.007	0.008	0.009	0.010	0.011
	July 14.....	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.003	0.004	0.005	0.006	0.007	0.008	0.009	0.010	0.011
	July 15.....	0.003	0.002	0.001	0.002	0.003	0.004	0.006	0.011	0.014	0.017	0.020	0.023	0.026	0.029	0.032	0.035	0.038	0.041
	July 17, No. 2.....	0.003	0.002	0.001	0.002	0.003	0.004	0.006	0.011	0.014	0.017	0.020	0.023	0.026	0.029	0.032	0.035	0.038	0.041
	July 18, No. 12.....	0.012	0.012	0.004	0.002	0.003	0.004	0.006	0.009	0.010	0.014	0.017	0.020	0.023	0.026	0.029	0.032	0.035	0.038
	July 19.....	0.008	0.004	0.003	0.003	0.002	0.003	0.004	0.006	0.009	0.010	0.016	0.025	0.028	0.032	0.037	0.040	0.043	0.046
	July 20.....	0.038	0.023	0.015	0.016	0.018	0.028	0.033	0.038	0.060	0.059	0.069	0.073	0.106	0.135	0.164	0.193	0.222	0.251
	July 21.....	0.009	0.006	0.003	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
Means.....	0.010	0.006	0.004	0.004	0.005	0.007	0.009	0.011	0.017	0.022	0.029	0.033	0.048	0.023	0.028	(0.070)	(0.093)	(0.104)	(0.116)

* These ascensions were made in the afternoons, beginning between 3 and 4.15 p. m.

TABLE 5.—*Observed values of absolute humidity (grams per cubic meter) at various levels, during the diurnal series at Fort Omaha, Nebr., July 17–18, 1914.*

Number and time of ascension.	Altitude (meters).																		
	312	500	1,000	1,500	2,000	2,500	3,000	3,500	4,000	4,500	5,000	6,000	7,000	8,000	9,000	10,000	11,000	12,000	
July 17–18, 1914.	<i>G./cu. m.</i>	<i>G./cu. m.</i>	<i>G./cu. m.</i>	<i>G./cu. m.</i>	<i>G./cu. m.</i>	<i>G./cu. m.</i>	<i>G./cu. m.</i>	<i>G./cu. m.</i>	<i>G./cu. m.</i>	<i>G./cu. m.</i>	<i>G./cu. m.</i>	<i>G./cu. m.</i>	<i>G./cu. m.</i>	<i>G./cu. m.</i>	<i>G./cu. m.</i>	<i>G./cu. m.</i>	<i>G./cu. m.</i>	<i>G./cu. m.</i>	
	6.607	5.820	4.693	3.825	3.178	2.036	2.402	1.976	1.459	1.115	0.880	0.499	0.326	0.188	-----	-----	-----	-----	
	6.651	6.797	5.229	3.918	2.925	2.401	2.134	1.781	1.478	1.140	0.833	0.448	0.289	0.131	-----	-----	-----	-----	
	8.251	7.707	6.002	5.170	4.172	3.523	2.183	1.750	1.300	0.984	0.702	0.373	0.189	0.124	-----	-----	-----	-----	
	8.310	9.720	7.346	6.051	4.575	4.012	3.245	2.015	1.595	1.359	0.916	0.498	0.297	0.147	-----	-----	-----	-----	
	10.844	10.515	8.585	6.460	4.844	4.011	3.629	3.257	2.843	2.287	1.525	0.737	0.381	0.272	-----	-----	-----	-----	
	10.998	10.500	8.838	6.701	5.570	4.584	4.272	3.970	3.367	2.804	1.903	0.888	0.574	0.458	-----	-----	-----	-----	
	8.605	10.844	11.367	10.710	9.363	7.501	6.459	6.294	5.952	5.721	4.900	4.713	4.520	4.327	4.134	3.941	3.748	3.555	
	10.1100 a.m.	11.314	11.836	9.493	7.608	6.000	4.791	4.391	3.887	3.217	2.702	2.539	1.705	1.333	0.960	-----	-----	-----	
	11.132 p.m.	13.066	11.840	9.629	7.608	6.296	5.834	5.175	4.368	4.093	3.855	2.889	1.706	1.292	0.740	-----	-----	-----	-----
12,400 p.m.	12.561	11.205	9.681	8.489	7.614	6.209	5.498	5.001	4.675	3.703	2.728	1.161	0.641	0.548	-----	-----	-----	-----	
	9.300	10,000	11,000	12,000	13,000	14,000	15,000	16,000	17,000	18,000	19,000	20,000	21,000	22,000	-----	-----	-----	-----	-----
	0.131	0.064	0.029	0.016	0.010	0.007	0.005	0.004	0.005	0.008	0.011	0.013	0.018	0.026	-----	-----	-----	-----	-----
	0.073	0.084	0.013	0.005	0.003	0.002	0.001	0.002	0.002	0.003	0.004	0.006	0.011	0.008	0.008	0.014	-----	-----	-----
	0.055	0.017	0.006	0.004	0.002	0.002	0.002	0.003	0.003	0.004	0.005	0.006	0.006	0.006	0.006	0.008	0.008	0.014	-----
	0.069	0.031	0.013	0.007	0.005	0.002	0.001	0.002	0.002	0.003	0.004	0.005	0.006	0.006	0.006	0.008	0.008	0.014	-----
	0.171	0.089	0.054	0.029	0.015	0.007	0.003	0.001	(*)	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	0.280	0.147	0.069	0.030	0.017	0.009	0.003	0.002	0.003	0.004	0.005	0.006	0.007	0.008	0.009	0.010	0.011	0.012	0.014
	0.603	0.324	0.085	0.032	0.012	0.007	0.005	0.002	0.002	0.003	0.004	0.005	0.006	0.007	0.008	0.009	0.010	0.011	0.014
	0.372	0.184	0.054	0.															

TABLE 6.—Smoothed hourly values of wind direction and velocity above Fort Omaha, Nebr., observed 2:30 p. m., July 17, to 2:30 p. m., July 18, 1914.

Levels.	A. M.											
	1	2	3	4	5	6	7	8	9	10	11	12
312 m.: Direction.....	N. 70° E. 4.5	N. 86° E. 4.4	S. 79° E. 4.3	S. 66° E. 3.5	S. 50° E. 2.3	S. 27° E. 1.3	S. 7° E. 0.8	S. 14° W. 0.4	S. 82° W. 0.7	N. 86° W. 1.4	W. 2.1	S. 85° W. 2.5
500 m.: Direction.....	N. 70° E. 4.5	N. 83° E. 4.3	S. 83° E. 4.0	S. 71° E. 3.7	S. 61° E. 3.3	S. 55° E. 2.8	S. 49° E. 2.0	S. 36° E. 0.9	N. 81° W. 0.6	N. 65° W. 1.9	N. 64° W. 3.0	N. 68° W. 3.7
1,000 m.: Direction.....	N. 62° E. 5.1	N. 66° E. 5.4	N. 72° E. 4.8	N. 81° E. 3.9	S. 88° E. 3.1	S. 60° E. 2.2	S. 32° E. 1.5	S. 10° W. 1.7	S. 18° W. 2.3	S. 12° W. 2.9	S. 14° W. 3.0	S. 33° W. 2.7
1,500 m.: Direction.....	S. 38° W. 1.6	S. 34° W. 0.7	N. 35° E. 1.2	N. 32° E. 3.2	N. 29° E. 4.1	N. 27° E. 4.0	N. 22° E. 3.1	N. 10° E. 1.7	N. 60° W. 0.8	S. 66° W. 1.7	S. 58° W. 2.5	S. 51° W. 2.2
2,000 m.: Direction.....	N. 36° W. 1.9	N. 20° W. 2.0	N. 8° W. 2.8	N. 3° W. 3.4	N. 2° W. 3.4	N. 4° W. 2.7	N. 17° W. 1.7	N. 72° W. 1.0	S. 50° W. 1.6	S. 31° W. 2.6	S. 17° W. 3.0	S. 3.1
2,500 m.: Direction.....	N. 63° W. 3.3	N. 62° W. 3.0	N. 54° W. 2.6	N. 41° W. 2.3	N. 30° W. 2.0	N. 30° W. 1.6	N. 48° W. 1.5	N. 69° W. 1.7	S. 36° W. 1.4	S. 17° W. 1.0	S. 29° E. 2.3	S. 39° E. 3.5
3,000 m.: Direction.....	N. 29° W. 1.8	N. 41° W. 2.0	N. 50° W. 1.7	N. 47° W. 1.9	N. 34° W. 3.0	N. 29° W. 4.5	N. 32° W. 5.3	N. 39° W. 5.0	N. 40° W. 4.0	N. 19° W. 2.4	N. 41° E. 1.8	E. 2.3
3,500 m.: Direction.....	N. 22° W. 5.4	N. 20° W. 6.2	N. 19° W. 5.7	N. 21° W. 5.0	N. 25° W. 4.7	N. 25° W. 4.3	N. 18° W. 3.5	N. 5° E. 2.4	N. 51° E. 2.2	N. 84° E. 3.0	S. 79° E. 3.6	S. 58° E. 3.4
4,000 m.: Direction.....	N. 25° W. 4.5	N. 27° W. 5.0	N. 27° W. 4.7	N. 28° W. 4.1	N. 31° W. 3.5	N. 35° W. 2.9	N. 10° W. 2.1	N. 17° E. 1.7	N. 63° E. 1.3	S. 42° E. 1.3	S. 6° E. 2.8	S. 3.7
,500 m.: Direction.....	N. 9° E. 1.8	N. 1.2	N. 12° W. 1.7	N. 81° W. 2.6	N. 76° W. 3.2	N. 67° W. 3.6	N. 67° W. 3.0	S. 81° W. 1.9	S. 28° W. 2.1	S. 10° W. 2.9	S. 8° W. 2.8	S. 12° W. 2.5
5,000 m.: Direction.....	N. 6° W. 1.9	N. 38° W. 2.3	N. 65° W. 2.3	N. 88° W. 2.8	S. 87° W. 3.6	S. 87° W. 4.3	S. 82° W. 3.7	S. 56° W. 2.5	S. 10° W. 2.3	S. 13° E. 2.8	S. 24° E. 3.0	S. 36° E. 2.7
6,000 m.: Direction.....	N. 82° E. 1.5	S. 54° E. 1.4	S. 22° E. 1.6	S. 3° W. 1.7	S. 24° W. 2.0	S. 38° W. 2.3	S. 45° W. 2.5	S. 51° W. 2.8	S. 55° W. 2.8	S. 62° W. 2.7	S. 71° W. 2.4	S. 82° W. 2.1
Levels.	P. M.											
	1	2	3	4	5	6	7	8	9	10	11	12
312 m.: Direction.....	S. 80° W. 2.9	S. 80° W. 3.4	S. 80° W. 3.5	S. 76° W. 3.0	S. 62° W. 2.4	S. 53° W. 2.0	S. 58° W. 1.5	N. 84° W. 1.0	N. 9° W. 1.3	N. 23° E. 2.6	N. 39° E. 3.6	N. 54° E. 4.3
500 m.: Direction.....	N. 73° W. 4.2	N. 79° W. 4.8	N. 83° W. 4.8	S. 86° W. 4.1	S. 63° W. 2.9	S. 36° W. 2.6	S. 25° W. 2.3	S. 25° W. 1.4	N. 45° E. 0.1	N. 37° E. 2.0	N. 47° E. 3.4	N. 59° E. 4.2
1,000 m.: Direction.....	S. 67° W. 3.3	S. 77° W. 4.1	S. 79° W. 4.5	S. 78° W. 4.2	S. 84° W. 3.6	N. 84° W. 3.1	N. 63° W. 2.8	N. 40° W. 2.6	N. 19° W. 2.4	N. 11° E. 2.0	N. 42° E. 2.7	N. 57° E. 4.0
1,500 m.: Direction.....	S. 40° W. 1.6	S. 34° W. 1.1	S. 21° W. 0.9	S. 9° E. 1.2	S. 30° E. 2.0	S. 33° E. 2.4	S. 29° E. 2.1	S. 23° E. 1.3	S. 14° E. 0.4	N. 45° W. 0.3	N. 70° W. 0.4	S. 49° W. 1.1
2,000 m.: Direction.....	S. 17° E. 3.1	S. 23° E. 3.6	S. 26° E. 3.9	S. 32° E. 3.8	S. 49° E. 3.2	S. 63° E. 2.2	S. 76° E. 1.2	N. 18° E. 0.3	N. 34° W. 1.4	N. 35° W. 2.4	N. 36° W. 2.7	N. 38° W. 2.4
2,500 m.: Direction.....	S. 42° E. 4.3	S. 42° E. 5.4	S. 42° E. 5.8	S. 45° E. 5.5	S. 62° E. 4.7	S. 82° E. 2.3	N. 47° E. 1.6	N. 3° E. 2.1	N. 21° W. 2.8	N. 37° W. 3.5	N. 48° W. 3.8	N. 57° W. 3.7
3,000 m.: Direction.....	S. 56° E. 2.9	S. 41° E. 4.0	S. 35° E. 4.5	S. 29° E. 4.6	S. 19° E. 4.2	S. 12° E. 4.0	S. 11° E. 3.8	S. 14° E. 3.3	S. 22° E. 2.4	S. 37° E. 1.0	N. 11° E. 0.5	N. 21° W. 1.4
3,500 m.: Direction.....	S. 35° E. 3.3	S. 18° E. 3.2	S. 7° E. 3.3	S. 1° E. 4.0	S. 2° W. 5.4	S. 1° W. 6.1	S. 1° E. 5.6	S. 4° E. 4.4	S. 6° E. 2.9	S. 1.4	N. 49° W. 0.9	N. 26° W. 3.4
4,000 m.: Direction.....	S. 3° E. 3.5	S. 7° E. 3.3	S. 8° E. 3.5	S. 10° E. 3.0	S. 17° E. 3.8	S. 27° E. 3.4	S. 35° E. 2.8	S. 47° E. 2.1	S. 70° E. 1.5	N. 59° E. 1.2	N. 6° E. 1.9	N. 16° W. 3.3
4,500 m.: Direction.....	S. 21° W. 1.7	S. 11° E. 1.0	S. 77° E. 0.9	N. 67° E. 1.3	N. 12° E. 1.4	N. 6° W. 1.9	N. 1.8	N. 47° E. 1.6	N. 85° E. 2.4	S. 80° E. 3.5	S. 80° E. 3.5	E. 2.8
5,000 m.: Direction.....	S. 51° E. 2.6	S. 72° E. 1.9	N. 66° E. 1.2	N. 13° E. 1.3	N. 1.7	N. 7° E. 1.6	N. 32° N. 1.5	N. 41° E. 1.1	N. 83° E. 2.5	E. 2.9	N. 81° E. 2.5	N. 47° E. 1.8
6,000 m.: Direction.....	N. 81° W. 1.9	N. 61° W. 1.8	N. 40° W. 1.6	N. 4° W. 1.4	N. 40° E. 1.7	N. 60° E. 2.4	N. 68° E. 2.9	N. 67° E. 3.0	N. 59° E. 3.1	N. 51° E. 3.2	N. 48° E. 2.8	N. 54° E. 2.2